FITCHBURG STATE COLLEGE - UNDERGRADUATE CATALOGUE

FSC

FITCHBURG

1975 1976

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FITCHBURG STATE COLLEGE

1975 1976

UNDERGRADUATE CATALOGUE

CALENDAR 1975-1976

1st SEMESTER

September 2, 1975	College Opens
September 3	Classes Begin
September 3	First Station Student Teaching Begins
October 9	U. S. and Mass. Constitution Examinations
October 13	Columbus Day — No Classes
October 15-Wed.	Monday Class Schedule
October 31	End-First Station Student Teaching
November 3	Second Station Student Teaching Begins
November 11	Veterans' Day — No Classes
November 13	U. S. and Mass. Constitution Examinations
November 21	Last day for Withdrawal from class without penalty
November 26	Classes End at 3 p.m.
November 27-28	Thanksgiving Recess
December 12	Classes End
December 13-23	Final Examinations
January 9	End-Second Station Student Teaching

2nd SEMESTER

January 12	First Station Student Teaching Begins
January 15	Martin Luther King Day (No Classes)
January 19	College Opens
January 20	Classes Begin
February 16	Washington's Birthday (No Classes)
February 18-Wed.	Monday Class Schedule
February 26	U. S. and Mass. Constitution Examinations
March 19	End-First Station Student Teaching
March 19-28	Spring Vacation
March 22	Second Station Student Teaching Begins
April 8	U. S. and Mass. Constitution Examinations
April 15	Last Day for Withdrawal from class without penalty
April 16	Good Friday — No Classes
April 19	Patriot's Day — No Classes
May 12	Classes End
May 13-22	Final Examinations
May 28	End-Second Station Student Teaching
June 6-Sunday	Commencement

Examination Schedules in each semester include two Saturdays.

TABLE OF CONTENTS

GENERAL INFORMATION

Administration 5
Faculty 7
The College 18
Goals and Objectives 19
Admission of Students 22
Advanced Standing 25
College Housing 26
Student Costs 26
Veteran Education 28
Financial Assistance 28
Requirements for Graduation 30
Student Teaching 30
Withdrawal from Class 32
Withdrawal from the College 32
Parking Regulations 32

DEGREE PROGRAMS

General Education 32
Behavioral Science Sequence 34
Foreign Language Requirements for B.A. 34
Professional Sequence for All Secondary Majors 34
Specialization for Elementary Majors 34
Graduate Study 36
Undergraduate Evening Session 35
Specific Degree Requirements for Majors 37
- B.A., B.S. in Biology 37
- B.S. in Education, Biology 37
- B.S. in Education, Chemistry 39
- B.A., B.S. in Chemistry 39
- B.S. in Computer Science 40
- B.S. in Education, Early Childhood 41
- B.S. in Education, Elementary 41
- B.S. in Education, English 42
- B.A. in English 42
- B.A., B.S. in Education, Geography 43
- B.S. in Education, History 44
- B.A. in History 45
- B.S. in Human Services 45
- B.S. in Education, Industrial Arts 46
- B.A., B.S. in Mathematics 46
- B.S. in Education in Mathematics 47
- B.S. in Medical Technology 48
- B.S. in Nursing 48

B.A. in Physics 51
B.S., B.S. in Education, Physics 51
B.A., B.S. in Psychology 52
B.S. in Education, Special Education 53
B.A., B.S. in Sociology 54
Explanation of Course Numbers 55

DESCRIPTION OF COURSES AND REQUIREMENTS

Art 55
Behavioral Sciences 56
Biology 60
Chemistry 63
Computer Science 64
Early Childhood 66
Elementary and Secondary Education 66
English 67
Foreign Languages 75
French 75
German 76
Russian 76
Spanish 77
Geography 71
History 72
Human Services 58
Industrial Arts 79
Instructional Media 82
Mathematics 82
Medical Technology 84
Music 84
Nursing 85
Philosophy 77
Physical Education 86
Physics 88
Political Science 89
Psychology 56
Science 90
Sociology 59
Special Education 90
Speech 93

ADMINISTRATION

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Michael Rivard, B.S.	*Bursar*
David F. Ryder, Ed.D.	*Director of Instructional Media*
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FACULTY

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ANNE MAY B.S. Ed. Fitchburg State College; Ed.M., Ed.D. Boston College. *Professor, Special Education.* 1956

BARBARA A. MAY B.S. (Nursing) Boston College; M.Ed. Fitchburg State College; M.S. Boston University. *Instructor, Nursing.* 1974

ELIZABETH MAY B.S.Ed. Fitchburg State Teachers College; M.S.N. Boston College. On leave of absence, Fall, 1975. *Associate Professor, Nursing.* 1970

JOHN J. MAZEIKA B.S. Holy Cross College; M.Ed. Boston College. *Director of Pupil Personnel Services, McKay Campus School.* 1966

GLENDON H. McALISTER B.A. Bates College; M.Ed. Bridgewater State College. *Instructor, McKay Campus School.* 1974

MARIE McALLISTER A.B. Good Counsel College; M.A. Brown University. *Assistant Professor, English.* 1969

MURIEL McAVOY B.A. Radcliffe College; A.M., Ph.D. Boston University. *Associate Professor, History.* 1965

DONNA-LEE McCABE B.S. University of Rochester; M.Ed. Boston University. *Assistant Professor, Psychology.* 1970

MARILYN McCAFFREY B.Ed. Rhode Island College; M.A. Brown University; Ed.D. Boston University. *Associate Professor, English.* 1971

MARY JANET McCARTHY B.S. Boston University; Ed.M. Boston University. *Assistant Professor, Instructional Media.* 1974

ROBERT McDERMOTT B.S.Ed., M.Ed. Fitchburg State Teachers College. *Instructor, McKay Campus School.* 1960

MARGARET McDOWELL B.S.Ed., M.Ed. Fitchburg State Teachers College. *Assistant Professor, McKay Campus School.* 1950

JOHN McGRAIL, JR. A.B. Holy Cross College; A.M. Boston College. *Assistant Professor, English.* 1963

PHILLIP A. McMURRAY A.B. Manhattan College; Ed.M. Fitchburg State Teachers College. *Associate Professor and Director, Evening Session.* 1947

JOHN A. McNANEY B.S. Ed., Ed.M. State Teachers College at Fitchburg; Ph.D. University of the Pacific. *Professor and Chairman, Chemistry.* 1958

FRANCIS McSHERRY A.B. Clark University; M.A.T. Assumption College. *Assistant Professor, McKay Campus School.* 1968

JOHN P. MEANEY B.S. University of Texas at El Paso; Ed.M. Boston University. *Assistant Professor, Instructional Media.* 1971

HAROLD W. MELVIN A.B. Harvard College; B.D. Episcopal Theological School; S.T.M. Harvard University; Th.D. Boston University. *Associate Professor, Sociology.* 1970

GEORGE H. MERRIAM A.B. Clark University; A.M. Brown University; Ph.D. Clark University. *Academic Dean and Professor, History.* 1965

PASQUALE MICCICHE B.S., A.B., M.Ed. Boston College; M.A. University of Minnesota. *Assistant Professor, History.* 1969

FREDERICK R. MILLER B.S.Ed., Ed.M. Fitchburg State College; C.A.G.S. University of Connecticut. *Assistant Professor, Industrial Arts.* 1966

GEORGE L. MILLER B.A., M.A. Eastern Michigan University; Ph.D. University of Michigan. *Associate Professor, Early Childhood Education.* 1972

SANDRA MILLER-JACOBS B.A. Queens College; M.Ed Boston University. *Instructor, Special Education.* 1974

JANE A. MINASIAN B.S. Boston University; M.S. Boston University. *Instructor Nursing.* 1975

M. IRENE MIRANDA B.S.Ed. Bridgewater State College; M.A. University of Massachusetts. *Assistant Professor, English.* 1965

L. DORIS MOQUIN B.S.Ed. Salem State Teachers College; M.Ed., Ed.D. Boston University. *Associate Professor, Elementary Education.* 1966

CAROLINE MURPHY A.B. Regis College; A.M., Ph.D. Clark University. *Associate Professor, Economics.* 1971

THOMAS L. MURRIN B.S.E. State University of New York, M.A. Michigan State University. *Assistant Counselor.* 1971

JOHN F. NASH A.B., M.S. Boston College; Ed.M. Boston University; Ed.D. Syracuse University. *Director of Continuing Education and Professor, History.* 1958

BARRY NEEDLEMAN B.A. University of Massachusetts/Boston; M.Ed. Boston University. *Instructor, McKay Campus School.* 1975

ROSE MARIE NEUNHERZ B.S. Beaver College; M.S. Southern Connecticut State College; M.S. Northeastern University. *Associate Professor, Biology.* 1967

BARBARA NOLE B.S.Ed. Bridgewater State College; M.S.P.E. University of North Carolina. *Assistant Professor, Physical Education.* 1970

DONALD H. NORTON B.A., M.A. University of Connecticut; Ph.D. Clark University. *Professor and Chairman, Social Sciences.* 1969

CHARLOTTE E. O'CONNOR B.S. Boston College School of Nursing; M.S. Boston College Graduate School of Arts and Sciences. *Instructor, Nursing.* 1975

KATHERINE E. O'CONNOR B.S.Ed. Fitchburg State Teachers College; M.S. Boston College. C.A.G.S. Boston University. *Associate Professor, Nursing.* 1962

M. ELIZABETH O'CONNOR B.S.Ed., M.Ed. Fitchburg State Teachers College. *Assistant Principal, McKay Campus School and Assistant Professor, Education.* 1948

ARTHUR O'DEA M.D. University of Buffalo. *Adjunct Clinical Professor in Medical Technology.* 1973

HELEN O'FLAHERTY B.A. College of St. Teresa; M.A., Ph.D. Fordham University. *Associate Professor, Education.* 1971

ALICE T. O'MALLEY B.A. Anna Maria College; M.A., Ph.D. Clark University. *Associate Professor, Biology.* 1965

REGINALD F. O'NEILL S.J., B.A., M.A. Boston College; Ph.L., S.T.L. Weston College; Ph.D. Fordham University. *Professor, Philosophy.* 1970

LAWRENCE A. OVIAN A.B. Bates College; Ed.M. Pennsylvania State University; Ed.D. University of Massachusetts. *Director of Field Services and Professor, Education.* 1971

ERWIN PALLY B.A., A.M. University of Massachusetts; A.M. Harvard University. *Assistant Professor, English.* 1966

CHARLES J. PANAGEOTES B.S. Fitchburg State Teachers College; M.Ed. Fitchburg State College. *Instructor, McKay Campus School.* 1971

IRENE PASSIOS B.S.Ed., M.Ed. Fitchburg State Teachers College. *Assistant Professor, Education.* 1954

FRANK C. PATTERSON B.A. Trenton State College; M.M. Temple University. *Assistant Professor, Music.* 1968

ALBERT F. PIERCE B.S., M.Ed. Fitchburg State College. *Instructor, McKay Campus School.* 1971

ROBERT C. PIERLE A.B. Hampden Sydney College M.A. Duke University; Ph.D. Auburn University. *Assistant Professor, English.* 1974

ERNEST PIKE B.S., M.Ed. Fitchburg State Teachers College. *Assistant Professor, McKay Campus School, Industrial Arts.* 1969

FRANCIS J. PILECKI B.A. St. John Fisher College; M.Ed., Ed.D. University of Rochester. *Dean of Teacher Education and Professor, Education.* 1974

PIERRE L. PINET B.A. University of New Hampshire; M.A. University of Pennsylvania; M.A. Rivier College. *Associate Professor, French.* 1961

ANNE POLLOCK B.A. University of Maine. *Adjunct Clinical Professor in Medical Technology.* 1973

HAROLD O. POSSELT B.A. University of Connecticut; M.Ed. Michigan State University. *Instructor, McKay Campus School.* 1973

BARBARA ANN POWERS B.S. (Nursing) University of North Carolina; M.S. Boston College. *Instructor, Nursing.* 1974

FRANCIS P. POWERS A.B. Maryknoll Seminary; M.Ed., Ed.D. Boston College. *Professor, Secondary Education.* 1964

NANCY PUCILLO B.S. Fitchburg State College. *Instructor, McKay Campus School.* 1975

LAWRENCE A. QUIGLEY B.A. Iona College; M.A., Ph.D. Fordham University. *Executive Vice President and Professor, English.* 1968

HELENE RILEY B.S.P.A. Boston University; M.Ed. Fitchburg State College. *Instructor, McKay Campus School.* 1964

LAWRENCE P. RISMAN B.S. Massachusetts Institute of Technology; M.A., Ph.D. Harvard University. On leave of absence, 1975-76. *Assistant Professor, Mathematics.* 1968

ANNE RODGERS B.A. Ohio Wesleyan University; M.A.T. University of Massachusetts. *Adjunct Clinical Professor in Medical Technology.* 1973

ELIZABETH ROSS A.B. Mt. St. Mary College; M.Ed., Ed.D. Boston University. *Associate Professor, Education.* 1969

DAVID J. ROUSSEAU B.S., M.Mu.Ed. Lowell State College. *Instructor, McKay Campus School.* 1970

ALICE E. RYAN B.S. Boston College; M.S. Boston University. *Instructor, Nursing.* 1972

DAVID F. RYDER B.S.Ed. Fitchburg State Teachers College; M.A. University of Maryland; Ed.D. Boston University. *Director of Instructional Media and Professor, Instructional Media.* 1963

ANN VICTORIA SAALBACH B.A. Duke University; M.Ed. University of Massachusetts. *Instructor, McKay Campus School.* 1973

JEREMY W. SAYLES B.A. Allegheny College; M.S.L.S. Simmons College. *Reference Librarian.* 1972

FLORENCE SCARPACI B.S., M.Ed. Worcester State College; M.F.A. Assumption College. *Assistant Professor, McKay Campus School.* 1966

JEANNETTE SCHARF M.A. Queens University. *Instructor, Spanish.* 1973

SUSAN SCHENKEL B.A. University of Wisconsin; M.A., Ph.D. State University of New York at Buffalo. *Counselor.* 1972

JUDITH SCHIFFERLE B.S. State University College at Buffalo; M.Ed. Fitchburg State College. *Instructor, McKay Campus School, English.* 1971

DONALD J. SCHMIDT B.A., M.A. State College of Iowa; Ph.D. University of Iowa. *Professor, Biology.* 1967

MYRA SCHWARTZ B.A., University of Denver; M.A.T. Oakland University. *Instructor, McKay Campus School.* 1973

HARRY SEMERJIAN B.M. Boston University College of Music; M.A. Boston University. *Assistant Professor, Music.* 1960

JOHANNA SEYMOUR B.A. Ohio Wesleyan University. *Instructor, McKay Campus School.* 1971

CHRISTINE SHAUGNESSY A.B. Mt. Holyoke; M.S. Ph.D. Georgetown University. *Associate Professor, Mathematics.* 1971

ROBERT SHAUGHNESSY B.S.Ed., Ed.M. Fitchburg State Teachers College; M.N.S. Worcester Polytechnic Institute. *Assistant Professor, Computer Science.* 1966

LOUIS P. SHEPHERD B.S.Ed. Kansas State Teachers College of Emporia; A.M. Columbia University. *Associate Professor, English.* 1952

MICHAEL A. SIEGEL B.A., M.A. William Patterson College; Ph.D. University of Utah. *Assistant Professor, Speech.* 1972

JANET SIMMONS Diploma, Worcester Memorial Hospital; B.S., M.S. Boston University School of Nursing; M.Ed. Fitchburg State College. *Assistant Professor, Nursing.* 1971

SEDA SPARLING B.S., M.D. Boston University. *Adjunct Clinical Professor in Medical Technology.* 1973

RICHARD SPENCER B.A., M.A. Alfred University; Ph.D. State University of New York at Buffalo. *Assistant Professor, Psychology.* 1972

LINDA MARIE STRAUSS B.S. University of Vermont; M.S. University of Colorado. *Instructor, Nursing.* 1975

CHARLES STREFF B.A., M.Ed., Mt. Carmel College; M.A., Ph.D. Boston College. *Assistant Professor, Psychology.* 1973

ROBERT S. STRONG B.A. Central Washington State College; M.S. Oregon State University; Ph.D. University of the Pacific. *Assistant Professor, Chemistry.* 1973

KATHLEEN SYNA B.A. Bennington College; M.A., P.D. Columbia University. *Assistant Professor, McKay Campus School.* 1974

ROBERT S. TAPPLY B.S.Ed., Ed.M. Fitchburg State Teachers College. *Assistant Professor, English.* 1966

MARGARET TAYLOR B.S.N. New York University; M.S.N. Boston University; M.Ed. Fitchburg State College. *Associate Professor, Nursing.* 1966

ROWENA TAYLOR B.S.Ed. Fitchburg State Teachers College; M.A. Assumption College; M.S. Boston College. *Assistant Professor, Nursing.* 1968

EDMUND B. THOMAS B.S. John Carroll University; M.A. Kent State University; Ph.D. Clark University. *Associate Professor, History.* 1967

RENE J. THOMAS B.S.Ed., Ed.M. Fitchburg State Teachers College; M.Ed. Northeastern University. *Associate Professor, Industrial Arts.* 1957

DUANE W. THOMFORDE B.A., M.A. University of Texas at El Paso; M.S. Michigan State University. *Instructor, Industrial Design.* 1974

ELBERT L. TOMPKINS B.S. West Chester State College; M.A., Ed.D. Columbia University. *Associate Professor, Psychology.* 1971

DOLORES TORTI B.S.N. Georgetown University; M.S. Boston University. *Assistant Professor, Nursing.* 1973

ESMAIL VALANEJAD B.S. University of Birmingham; Ph.D. Princeton University. *Associate Professor, Physics.* 1968

MICHAEL VIGNALE A.B., Ph.D. Boston University. *Associate Professor, Chemistry.* 1966

MILDRED L. VINSKEY B.S. Worcester State College; M.Ed., Ed.D. University of Massachusetts. *Associate Professor, McKay Campus School.* 1967

ELEANOR VOORHIES B.A. Park College; M.N. Yale School of Nursing; M.A. Columbia University. *Professor and Chairman, Nursing.* 1972

CLIFFORD H. WAGNER B.A. University of Cincinnati; M.A. University of Michigan; Ph.D. State University of New York at Albany. *Assistant Professor, Mathematics.* 1973

ELIZABETH L. WARREN B.A. Russell Sage College; M.S.S.S. Boston University. *Counselor, McKay Campus School.* 1973

ROBERT WELCH B.S., M.S. Emerson College. *Assistant Professor, Speech.* 1968

FRANK WOLF B.S., M.A., Ed.D. New York University. *Professor, Biology.* 1957

ALLEN W. ZALK A.B., Ed.M. Boston University; Ed.D. Yeshiva University. *Associate Professor, Special Education.* 1969

MICHELE M. ZIDE B.A. Mount St. Mary College; M.S. Boston College; Ed.D. University of Massachusetts. *Assistant Professor, Special Education.* 1973

ROBERT ZOTTOLI B.A. Bowdoin College; M.S., Ph.D. University of New Hampshire. *Professor, Biology.* 1965

MEDICAL OFFICERS

Quintino Rollo, M.D.	*Director of Medical Services*
Svend W. Bruun, M.D.	*College Physician*
Joel Neuschatz, M.D.	*College Physician*
Anthony A. Ferrante, M.D.	*College Psychiatrist*
Doris M. Keefe, R.N., B.S.	*Nurse*
Mary H. Langille, R.N.	*Nurse*
Pauline Maynard, R.N., B.S.	*Nurse*

GENERAL PERSONNEL SUPERVISORS

Carl Beauchamp, B.S.	*Computer Programmer*
J. Paul Dupont	*Chief Engineer*
Robet McCluskey	*Head Janitor*
Daniel F. O'Connor	*Head Groundsman*
Edward F. Leary, B.S. in B.A., M.Ed.	*Chief Accountant*
Claire G. Lavoie	*Head Administrative Clerk*

FITCHBURG STATE COLLEGE

Fitchburg State College was established as a Normal School under Chapter 457, Acts of 1894 of the General Laws of the Commonwealth of Massachusetts. It became a State Teachers College in 1933 and a State College in 1962. The College is located on the north side of the City of Fitchburg, forty-five miles west of Boston and is easily reached by car or bus from all parts of Massachusetts.

Some 3400 students on-campus and 2500 students off-campus, are currently enrolled at the College in the undergraduate program with an additional 1300 students pursuing graduate studies. Fitchburg State College is empowered to grant the following undergraduate degrees: Bachelor of Arts; Bachelor of Science, Bachelor of Science in Business Administration, Bachelor of Science in Computer Science, Bachelor of Science in Education, Bachelor of Science in Industrial Science, Bachelor of Science in Medical Technology, Bachelor of Science in Nursing.

Students preparing to be teachers are candidates for the degree of Bachelor of Science in Education. They may major in Early Childhood Education, Elementary Education, Industrial Arts Education, Secondary Education, Special Education, or Vocational Education (through an off-campus program). Students in Secondary Education may select a subject-matter major from one of the following fields: Biology, Chemistry, English, Geography, History, Mathematics, or Physics.

Bachelor of Arts programs are available in Biology, Business Administration, Chemistry, English, Geography, History, Mathematics, Physics, Psychology and Sociology. Bachelor of Science Programs are currently available in Biology, Business Administration, Chemistry, Computer Science, Human Services, Industrial Science, Mathematics, Psychology, Physics and Sociology.

The campus consists of academic buildings and laboratories, administration center, three residence halls, a dining commons, and a gymnasium. Newest buildings on the main campus include two of the residence halls for women, a large auditorium-theatre, a Fine and Industrial Arts building and a multi-story combined Library and Campus Center. Final planning is under way for a Special Education Center. Plans for renovation of the Behavioral Science and Edgerly; and the power plant buildings are complete.

A short distance north of the main campus are a thirty-four acre athletic and recreational area and the new 1000-pupil McKay Campus School, comprised of a modern elementary and junior high school. This new school retains and expands one of the College's outstanding features, a laboratory school system for children and college students, exemplifying the best in educational theories and practices and sharing these developments with school districts throughout the Commonwealth.

The Biology Department maintains a 75-acre field station on the property of 4-H Camp Middlesex in Ashby, Massachusetts. This facility serves as a focal point for course work and research in field biology, conservation and ecological study, and environmental science.

FITCHBURG STATE COLLEGE GOALS AND OBJECTIVES

THE COLLEGE COMMUNITY

Goal

A paramount objective of Fitchburg State College is the promotion of the welfare of the entire College community. To this end the College aims:

Objectives

1. To provide a systematic evaluation of present programs, policies, practices, and all members of the College community, as well as the regular assessment of needs in conjunction with short-, medium-, and long-range planning.
2. To strive for the recognition of and respect for the rights and responsibilities of all members of the College community.
3. To establish and maintain well-defined and open channels of communication throughout the structure of the College.
4. To maintain a clearly defined system of governance which calls for active participation by representatives of students, faculty, and administrators.
5. To encourage individuals in their search for meaningful truth and in the honest consideration of ideas both in the classroom and in communication with all members of the College community.

STUDENT DEVELOPMENT

Goal

The intellectual, esthetic, and moral development of students during their college years demands the existence on campus of a "tone" or climate suitable to the attainment of this goal. Therefore, the College aims:

Objectives

1. To develop a spirit of commitment to learning by stressing high standards of intellectual performance, by encouraging scholarly research, by developing the ability to analyze and synthesize knowledge from a variety of sources, and by communicating the conviction that learning is a life-time process.
2. To enable students to acquire knowledge in areas such as the Humanities, Social Sciences, Physical Sciences, Biological Sciences and Mathematics as well as a depth of knowledge in at least one academic discipline and/or interdisciplinary studies.
3. To strive for moral development which requires reflection on and self-appropriation of ethical principles as a guide for personal conduct, as a basis for self-esteem, and as an aid to growing in respect for others.
4. To assist students:
   a. to recognize the great moral issues of our time;
   b. to develop respect for all peoples;
   c. to seek the improvement of the quality of human life in areas such as environment, social problems and other relevant issues of the day.
5. To establish those conditions which are conductive to an esthetic environment that involves students and faculty in the determination and promotion of cultural activities.

CAREER EDUCATION
Goal

The College aims to assist students in identifying their own personal goals and in deciding upon their careers. To attain this goal, the College strives:

Objectives

1. To prepare students to meet the needs of society through careers in areas such as teaching, nursing, medical technology, human services, business, industry, and government, among others.
2. To provide programs preparing students for these careers, including programs geared to new and emerging career fields.
3. To provide options and opportunities, including field services, which aid students in securing employment.
4. To provide additional training opportunities intended to renew and update persons already holding jobs.

THE COMMUNITY AT-LARGE
Goal

The college must acknowledge some responsibility touching on the life of the local, regional, State and national communities. To this end it should aim:

Objectives

1. To serve as a cultural and intellectual Center for these communities.
2. To cooperate with local, regional, State and federal agencies in attempting to solve local, regional, State and national social, economic or governmental problems.
3. To provide for continuing adult education.
4. To facilitate involvement of students in neighborhood and community service activities.
5. To make most effective and efficient use of the human, natural and material resources provided by these communities.

COLLEGE GOVERNANCE

Among the many organizations on campus the All-College Council plays a central and vital role. The Council is composed of five students, five faculty members, and five administrators, elected by their peers. The Council shares in governance in matters which concern the whole College Community. This means that the Council not only deals with problems which arise, but also recommends policy in areas affecting the entire College Community.

The College also has an Administrative Council, and a Student Government Association which deal with questions and policies relating to their respective areas and groups. The Fitchburg State College Education Association/MTA is the collective bargaining unit representing the College's faculty.

The College Library

The opening of the attractive Library/Campus Center complex makes available to the students of Fitchburg State an educational facility second to none in the State College System.

The library wing of this modern building provides the student with access to a sophisticated research collection. Included in the holdings of the college library are a book collection of more than 115,000 volumes; 1500 periodical subscriptions; 100,-

000 microfiche titles, together with an increasing number of pamphlets, government documents and audio-visual materials.

One of the basic tools for those students engaged in educational research is the ERIC microfiche collection which is located in the Periodicals Department on the second floor of the library. This collection, together with the other indexes and abstract services, makes it possible for a student to locate needed information on such topics as Special Education, Nursing, Guidance and Curriculum Development.

The student using the new library will find a friendly, competent staff of trained librarians ready to provide assistance or to answer questions on the location of material in the collection. Students are encouraged to use this new facility and every effort is made to accommodate them.

Learning Resources Center

The Learning Resources Center is located in the third floor of the Library. This new Center results from increasing recognition that the learning conditions required for each student may be different due to the uniqueness of individuals. The mission of the Learning Resources Center is to create conditions which will allow the various mixes of human and non-human resources to focus upon individualized learning.

To implement this mission the LRC is organized as follows:

1. to acquire, store, and distribute instructional software including films, computer programs, filmstrips, audio tapes, video tapes, kits and other higher education curriculum materials.
2. to create learning spaces appropriate to independent study, small group interaction, human and nonhuman tutoring, and large group activities.
3. to provide non-print support activities such as teleconferencing, origination of audio materials, and instructional FM radio programming.
4. to render instructional design assistance to faculty desiring to restructure their instruction.
5. to institute a research and development capability enabling faculty and students to evaluate instructional strategies and materials, to sharpen teaching behavior, to investigate the teaching/learning process and to develop observation skills.

Instructional Media Department

Specialized Instructional Media facilities on the campus include a full-color television studio, two media production laboratories, an autotutorial laboratory, a photographic dark room, an audio recording studio, a curriculum library with an information retrieval system, a language and learning laboratory at the McKay Campus School, and numerous lecture and resource facilities throughout the campus. The faculty and support personnel of the Instructional Media Department provide consultation, instruction and production assistance in television, photography, cinematography, graphics, equipment operation and audio recording. Instructional design, mediated teaching programs, programmed instruction and multi-media design and production also represent a large part of the department's activities. Members of the college community are urged to use the Media Department's services and should visit the main office in Edgerly Hall.

The College Computer Center

The Fitchburg State College Computer Center is a service department of the College. Facilities are provided to service the administrative, educational and research needs of the campus. The principal units of equipment in the Center at the present time are a Control Data Computer CDC System Installation 1700 terminal

which is connected to a Boston-based CDC Cyber-70 computer, a National Cash Register Century-50 computer, and an International Business Machine 1620 computer.

Computer usage ranges from the computation of assigned classroom problems to the support of special research projects of administrators and faculty. Many students begin to use the computer early in their programs of study and some continue to do so into graduate work. Opportunities to pursue courses of study oriented toward computer science are available and are described elsewhere in this catalog.

Information processing facilities at Fitchburg State College fall into two types: those provided within the Computer Center, which serves as a large and versatile central computing facility; and those provided through the Physics Department, which offers use of on-line teletypes for interacting with either the CDC central system or the in-house Digital Equipment Corporation PDP-8 minicomputer.

ADMISSION OF STUDENTS

Fitchburg State College endeavors to offer admission to those students whose high school records and backgrounds offer promise of a successful and satisfying college experience. Each applicant is considered individually, and the decisions of the Committee on Admissions are based on many factors. No consideration is given to an applicant's race, religion or national origin.

Taken into consideration are the high school record, scores on tests administered by the College Entrance Examination Board, recommendations by the high school principal or guidance counselor, and the extra-curricular and outside-of-school activities. Strong emphasis is placed on the high school record and rank in class.

Applications are accepted beginning in October. In order to be given consideration the application and all supporting credentials should be received no later than March 1.

Applications

It is necessary that applicants to the College comply with all the following requirements:

1. Application Form. To be submitted to the Admissions Office as early as possible during the senior year in high school. Applications may be obtained at high schools, Community Colleges, or State Colleges throughout the Commonwealth of Massachusetts.

2. Submission of a transcript of the complete high school record through the first marking period of the senior year. This must show a minimum of 16 units, preferably in college preparatory subjects. (All students, before entrance to college, must be graduated from high school or offer equivalent preparation.)

3. Submission of the College Entrance Examination Scholastic Aptitude Test (SAT) scores and the Student Descriptive Questionnaire (SDQ). The College welcomes the results of the College Entrance Board Achievement Tests. Many candidates present Achievement Tests in English and applicants who expect to continue in a foreign language in college should take an Achievement Test in that language. Other Achievement Tests may be taken in the student's major fields of interest. Junior year SAT scores are acceptable but it is strongly recommended that the senior year examinations also be taken. Note that it is the applicant's responsibility to arrange for the forwarding of the necessary test scores directly to the College from the Educational Testing Service, in Princeton, New Jersey. The college code number is R3518.

A recommendation of the applicant from his or her high school principal or guidance officer giving evidence of academic interest, ability, and preparation, should be sent to the Admissions Office.

Interviews are not required and are not a part of the selection process. However, applicants who desire to have an interview or to visit the campus are invited to write the Admissions Office for an appointment. Interviews are not scheduled on Saturdays or holidays.

Fitchburg State College employs a "rolling admissions" policy. Rather than a simultaneous notification of all applicants of their acceptance, the candidates are notified on a continuing basis over a period of several months.

College Level Examination Program

The primary goal of the College Level Examination Program (CLEP) is to make it possible for an individual to earn college credit on the basis of examinations. CLEP is a program of the College Entrance Examination Board. The CLEP examinations are very useful for traditional and regularly enrolled students, but they are especially valuable for people whose learning experiences have taken place primarily outside college classrooms.

CLEP POLICY STATEMENT

I. General Policy

Appropriate credit can be granted on the basis of general and/or individual Subject Examination results. However, a student may not be awarded more than 60 college credits through the CLEP Program.

II. Specific Policies

1. Credit for, or waiver of courses will be recorded only for students who have matriculated at Fitchburg State College.
2. Credit earned or requirements waived will be recorded by the Registrar upon receipt of an official score report from the College Entrance Examination Board. In recording results from the Subject Examination for which the Essay is required, approval of the major department and the General Education Council will be necessary.
3. Credit for the General, or for any of the Subject Examinations will not be granted if the student has completed, satisfactorily, one or more of the courses listed as equivalent courses to or having similar content to a CLEP Examination.
4. In order to receive transfer credits obtained under CLEP from another institution, the applicant must have a score which is equal to, or greater than that score which is the required minimum for credit at Fitchburg State College.

III. Distribution of Credits

1. General Examination

	Score	Equiv. Course	Credits (s.e.)
A. English Composition *	500	English 10 & 12	6
B. Humanities			

*A candidate who scores 500 or better on the English Composition Exam will be required to write and satisfactorily complete an essay administered by the English Department of the College.

Fine Arts	50		3
Literature	50		3
C. Mathematics	500	Math 10 & 11	6
D. Natural Sciences			
Biological	50		3
Physical	50		3
E. Social Sciences/History			
Social Science	50		3
History	50		3

2. Subject Examination
   A. The minimum score recommended for each Subject Examination is based upon the mean score of the "C" students in the normative group.
   B. The credit award for each Subject Examination is based upon the candidate attaining a score equivalent to the scores listed.

IV. Evaluation

1. This policy shall be periodically evaluated to determine its appropriateness in terms of the educational objectives of Fitchburg State College.
2. The faculty of each academic department within the College will have the right to rejecting such credits as a means of satisfying major program requirements. Where this right is exercised, the equivalency credits granted may be applied to the general education requirements or to electives when appropriate.
3. The Subject Examinations of CLEP are constantly being expanded to include additional subject areas. As soon as score-interpretation material is available for evaluation, additional CLEP Examinations will be added. The granting of credit for these new Subject Examinations should follow the general policy suggested in this Policy Statement.

Subject Examinations	Score	Equivalent Course	Credits Semester Hr.
Afro-American History	47	*	3
American Government	47	PS 10	3
American History	46	HI 21, 22	6
American Literature	46	EN20, 21	6
Biology	49	BI 10, 11	6
Calculus with Analytic Geometry	48	MA 23, 24	6
Clinical Chemistry**	50	MT 42	8
College Algebra	50	*	3
College Algebra — Trigonometry	49	MA 12	3
Computers & Data Processing	46	CS 10	3
Educational Psychology	47	PY 70	3
Elementary Computer (Fortran IV — Programming)	48	*	3
Fundamentals of Nursing	51	NS 20, 21	8
English Composition (with essay)	48	EN 10, 12	6
English Literature	46	EN 22, 23	6
General Chemistry	48	CH 13, 14	6
General Psychology	47	PY 10	3
Geology	49	GE 21	3

*Free elective or General Education

**A candidate who scores at or above the minimum passing score on the Clinical Chemistry, Hematology, or Immunohematology & Bloodbanking examinations will be required to take a practical examination in that area in order to receive college credit.

Hematology**	51	MT 40	8
History of American Education	46	ED 62	3
Human Growth & Development	47	PY21 (Child Psych.)	3
Immunohematology & Blood Banking**	49	MT 46	8
Introduction to Business Management	47	*	3
Introductory Accounting	50	*	6
Introductory Business Law	51	*	3
Introductory Macroeconomics	50	EC 10	3
Introductory Marketing	48	*	3
Introductory Microeconomics	50	EC 12	3
Introductory Micro- and Macroeconomics	50	*	3
Introductory Sociology	50	SOC 10	3
Microbiology	48	BI 44	3
Money and Banking	48	EC 14	3
Statistics	48	*	3
Tests and Measurements	46	PY 75	3
Trigonometry	49	*	3
Western Civilization	50	HI 10, 12	6

Information concerning the minimum grade scores, as well as the CLEP Program, may be obtained by writing to the CLEP Program Director, Fitchburg State College.

Exemption from English Composition

Students scoring 600 on the SAT Verbal Test or the CEEB English Achievement Test, as well as those who have done consistently well in high school English or who know that they write well, are advised to take a CLEP exam for possible exemption from and possible credit for English Composition I and II. In the case of transfer students with "P" grades or 3 s.h. credit, the English Department will administer an exam if the student desires. This exam exempts, but gives no credit. Students who have scores of 3, 4, or 5 on the Advanced Placement Exam will receive credit for English Composition I and II.

Transfer Students

Transfer students exempted from a three-hour Composition requirement in any accredited college or junior college may be exempt from EN 12. No credit is to be given. Students exempted from a six-hour Composition requirement will be exempt from EN 10 and 12. No credit is to be given.

A limited number of students are admitted to Fitchburg State on transfer from other colleges. Only students with satisfactory academic and personal records can be considered. Transfer into the Industrial Arts program can be made only in the Summer Session with the student's eligibility to continue thereafter dependent upon both his achievement and available space in the shop courses. (A minimum of 24 to 30 s.h. of acceptable credit is necessary for consideration as a transfer applicant.)

The following credentials must be submitted by transfer applicants:

1. Application for Admission.
2. Transcript or transcripts of all previous college work, including a statement of honorable dismissal from the last college attended.
3. A catalog from the previous college(s) with the courses taken clearly marked.

Transfer credits will normally be granted for work completed in other accredited colleges which was of passing grade or better and in courses similar in content to courses offered at Fitchburg. This evaluation is made only after an application has

been processed and admissibility has been determined. (Maintenance of a "C" average does not insure transfer to a State College).

Registered Nurses from diploma and/or associate degree programs are admitted to the Baccalaureate program. Advanced standing may be granted through (1) transfer credit, (2) challenge examinations (College Level Examination Program and Teacher-made examinations.) A total of 38 Nursing credits may be granted by competency examinations. In addition, see policy regarding CLEP examinations for General Education credits. R.N. applicants must complete the challenge exams prior to acceptance.

In accordance with Board of Trustees' policy the following guidelines have been established:

1. Applicants for transfer to any College in the Massachusetts State College system will be evaluated for admission on the basis of their previous college academic record.

2. Whenever possible, degree credit will be granted for course work completed at recognized institutions of higher education. Courses which do not fit the degree program may be counted as fulfilling the open elective requirements of the four-year curriculum. The transfer student will be required to fulfill the same degree requirements as any other student.

3. A student must successfully complete one year as a full-time student to receive a baccalaureate degree from Fitchburg State College, which normally must be the senior year.

4. Among equally qualified and eligible transfer applicants, priority in admissions will be as follows:

   a. First priority is given to transfer students in good standing from within the State College system.
   b. Second priority is given to qualified transfer applicants from Massachusetts Community Colleges.

To be given consideration, all applications should be made to the college by April 1 (March 1 for nursing candidates).

HOUSING

Residence Hall accommodations on campus for both men and women are available on a limited basis. Rooms are assigned for the academic year with an Occupancy Agreement required. Most rooms are arranged for double occupancy and are furnished with single beds, wardrobes, and desk and chair.

No rebate of Residence Hall charges is made once a student has occupied a room. It is emphasized that occupancy is expected for the full academic year.

All residents are required to participate in a food service plan. Rebates on food service charges are prorated on the same basis as tuition refund policy.

STUDENT COSTS

The following list includes the essential expenses (exclusive of such items as clothing, travel, and entertainment) for which a student would budget for an academic year:

Application Fee (not refundable nor applicable to tuition)	$ 10
Tuition	$300 ($150 per semester)
Tuition (out-of-state students)	$600 ($300 per semester)
Registration Fee (not refundable but applicable to tuition)	$ 50
Student Activity Fee	$30 ($15 per semester)
Athletic Fee	$25 ($12.50 per semester)
Books, Supplies	Approximately $150
Library Fee	$10 ($5 per semester)

Placement Fee (seniors only) ..... $ 5
Resident Hall Deposit (not refundable but applicable to room charge) ..... $ 50
Room and Board ..... (See item 5)
Educational Services Fee ..... $15 ($7.50 per semester)
Campus Center Fee ..... $30 ($15 per semester)
Residence Hall Damage Deposit ..... $ 25
Insurance (optional) ..... Approximately $ 30

All fees are subject to adjustment by the Board of Trustees of State Colleges in keeping with changing costs of operations.

All bills must be paid with either cashiers checks, money orders, bank checks or travelers checks. No personal checks will be allowed.

1. Application Fee

   $10 (not refundable nor applicable to tuition).

2. Tuition

   A. For residents of Massachusetts: $300 per year-payable in two installments of $150 at the beginning of each semester of 1975-1976.

   B. For non-residents: $600 per year — payable in two installments of $300 at the beginning of each semester.

3. Registration Fee

   A Registration Fee of $50 is required of all new students upon acceptance. It is not refundable, but is credited against the first semester tuition for students enrolling in the College.

4. Student Activity Fee and Athletic Fee

   All students are required to pay a Student Activity Fee of $30.00 per year ($15.00 per semester) and an Athletic Fee of $25.00 per year ($12.50 per semester). These non-refundable charges support certain extra-curricular and organizational programs on campus.

5. Room and Board for Resident Students

   The cost of board is $460 per academic year — 5-day plan; $492, per academic year 7-day plan, but the room cost depends upon the hall to which a student is assigned. The maximum charge for room and board at present is $1,172 annually and is payable in equal installments at the beginning of each semester.

   A residence hall deposit of $50 is required of all students accepted for rooming in a College residence hall. This payment, not refundable, is credited against the room charge.

6. Tuition Refund Policy

   A. For new students, freshmen and transfers: For all new students, there is a $50 non-refundable tuition deposit. Such deposit shall be credited to the student first semester tuition charges. If such a student withdraws prior to the beginning of classes or within the first week after the beginning of classes, he shall be entitled to a refund of two-thirds of the tuition charge. If he withdraws between the end of the first week and the end of the second week, he shall be entitled to a refund of one-half the tuition charge. If he withdraws between the end of the second week and the end of the third week, he shall be entitled to a refund of one-third of the tuition charge. A student withdrawing after the third week of classes shall receive no refund.

   B. For returning students: A returning student who has paid his tuition prior to the opening of school and who notifies the school that he will not be attending any classes will be entitled to a full refund of all tuition. If he withdraws between the beginning of classes and the end of the first week he shall be entitled to a refund of two-thirds of the tuition charge. If he withdraws between the end of the first week and the end of the second week he

shall be entitled to a refund of one-half the tuition charge. If he withdraws between the end of the second week and the end of the third week he shall be entitled to a refund of one-third the tuition charge. A student withdrawing after the third week shall not be entitled to any refund.

7. All costs listed above reflect Trustee Policy as of June 1, 1974. Future Trustee actions can result in increased costs.

Past Due Student Accounts

Any indebtedness to the College which becomes past due immediately jeopardizes the student's enrollment, and no such student shall be permitted to graduate or register for a subsequent semester or summer school term. Further, any student who fails to pay all indebtedness to the College may not be issued transcripts, diplomas, degrees, or other official statements.

Due dates are posted annually by the Chief Fiscal Officer.

VETERAN EDUCATION

Fitchburg State College is an approved institution for providing education for the returned veteran.

Veterans are urged to keep themselves informed about benefits available to them through the Veterans Administration. Information may be obtained from:

John F. Kennedy Federal Building
Veterans Administration — Regional Office
U.S. Government Center
Boston, Massachusetts 02203

Vietnam Veterans from Massachusetts are entitled to attend Fitchburg State College on a no-tuition basis. Additional information may be obtained from:

The Commonwealth of Massachusetts
Department of Education
182 Tremont Street
Boston, Massachusetts 02111

FINANCIAL ASSISTANCE

Fitchburg State College participates in the following Federal programs which are designed to provide financial assistance to students while in college. Those administered by the College are:

1. *The National Defense Student Loan and Nursing Student Loan Programs.* These programs are primarily designed for needy students and offer very favorable repayment terms. Under certain conditions a portion of the loan may be canceled for teaching or nursing service after college.

2. *The Educational Opportunity Grant and Nursing Scholarship Programs.* These are direct Federal scholarships based on exceptional financial need and evidence of academic promise. These grants do not have to be repaid.

3. *College Work/Study Program.* Campus employment for which students, particularly from low-income families, are paid for a specific number of hours of work each week.

4. *Basic Educational Opportunity Grant Program. (BEOG)* These awards are direct grants from the Federal Government to eligible students who are entering, or have enrolled in an approved post-secondary school for the first time after April 1, 1973 and are attending on a full-time basis.

Information regarding the Massachusetts State Scholarship Program can be obtained from the high schools or the Board of Higher Education Scholarship Office,

182 Tremont Street, Boston, Ma. 02111. The College does not administer this program.

A limited number of Special Education scholarships are available for students planning to teach mentally retarded children. Students who major in Special Education may also apply for the Commonwealth of Massachusetts Board of Higher Education General and Honor Scholarships.

The College also employs a limited number of students to work on campus.

Evidence of need is basic to all financial aid programs at the College. In order to assess such a need as fairly as possible, the College participates in the College Scholarship Service (CSS). Each applicant for financial aid must file a Parent's Confidential Statement (PCS) with CSS prior to April 1 of each year. These forms may be obtained from high schools, colleges, or the College Scholarship Service, P. O. Box 176, Princeton, New Jersey 08540.

Students who are self-supporting, under guardianship, or married, separated, or divorced submit a Student Confidential Statement (SCS) to College Scholarship Service Box 1501, Berkeley, Calif. 94701.

In addition to the Parent's Confidential Statement or the Student Confidential Statement, a Fitchburg State College application for financial aid is also required each year. These forms are available from the Financial Aid Office.

Additional information regarding financial aid may be obtained by writing to the Director of Financial Aid.

HEALTH CENTER

Quintino Rollo, M.D., Director
Svend W. Brunn, M.D., College Physician
Joel Neuschatz, M.D., College Physician

The Health Center is located at 364 North Street, it is open to all College students on a regular basis during the week with definite hours posted for the medical staff. There are also two full-time registered nurses in attendance at the Health Center.

CAREER PLANNING & PLACEMENT CENTER

George James Ed.D., Director of Careers
Raymond E. Bryant, M.Ed., Director of Placement
Richard J. Spencer, Ph.D., Supervisor of National Teacher Examinations, Graduate Records Examinations, College Level Examination Program.

The Career Center provides a variety of services for students, primarily in the areas of educational planning and career planning. Staff members work with students to increase their self-understanding and enable them to make career decisions more effectively in light of the various career opportunities available to them upon graduation from Fitchburg State College.

In addition to educational and career counseling, the Center offers remedial and developmental work in reading and improvement of study skills. A career development test battery and a library of career information are available for students who wish to explore their career interests, their personality, and their values.

Additional testing services and consultation are also available to students in the Career Planning and Placement Center. An extensive collection of standardized tests is housed here. Staff members are available to assist students and other members of the College community in selecting and utilizing tests in research, diagnosis, and evaluation. Several national programs of standardized testing are administered through the Center. Examples of these programs are: Graduate Record Examinations, National Teacher Examinations, College Level Examination Program (CLEP), and Miller Analogies Test.

The Center is open from 8:30 a.m. to 5:00 p.m. weekdays, and is located at 271 Highland Avenue, Fitchburg. Students may make appointments by visiting the Center or by telephoning 345-2151, Extension 241.

REQUIREMENTS FOR GRADUATION

1. Successful completion of all required courses and of the total semester-hour requirements of the program.
2. A 2.0 or better cumulative average for the total program.
3. A 2.0 or better average in the major field.
4. The successful completion of a standard first aid course in all Teacher-Education curricula.
5. The completion of a minimum of 30 semester hours at the college which normally must be in the senior year.
6. All Teacher Education majors must take the National Teacher Examinations before graduation.
7. Students graduating in June must file an application for graduation with the Registrar not later than February 1 of the year of graduation.

All graduates of Fitchburg State College must, according to State law, demonstrate a knowledge of the United States Constitution and the Constitution of Massachusetts. Students may meet the requirement by passing a written examination administered by the Department of Social Science. A pamphlet giving further information about the examination and a study guide may be obtained from the College Book Store. Students who successfully complete one of the following courses: Political Science 10, 20, 22, History 21, 22 are excused from the examination.

Screening Policies for Student Teaching

1. Positive recommendation of a majority of the faculty members in the area of the major and/or specialization.
2. A demonstrated effectiveness in oral and written communication as evidenced by use of currently acceptable levels of English.
3. The successful completion of a standard first aid course.
4. The successful completion of the tuberculin test.
5. Each candidate should possess a 2.0 cumulative index and a 2.0 index in his major field, as each department defines "major field." No incomplete in any course is allowed. No probational status is allowed. No unresolved failure is permitted in a candidate's major field.
6. A student convicted of a felony as defined and identified by the courts of any state is automatically ineligible for a teacher education program.

NOTE: An incomplete or failure in student teaching necessitates the repetition of the course. Each student must furnish transportation to his teaching assignments.

ATTENDANCE REGULATIONS

It is the responsibility of each instructor to maintain a record of attendance for students in his classes. Should the need arise for verification of a student's attendance, direct reference will be made to the faculty members involved.

Class attendance is a matter for instructor and student to consider. It is the prerogative of the instructor to place whatever value seems indicated upon attendance at class and his duty to inform his students of his views early in the semester. Students will not be dropped from class on basis of absences.

Where validation of an absence is available through any source, it is recommended that the student show the validation to all instructors concerned and then place it on file in the Registrar's office.

GRADING LEGEND

NUMERICAL GRADE			LETTER GRADE EQUIVALENT
4.0	=	excellent	A
3.5	=	very good	B+
3.0	=	good	B
2.5	=	above average	C+
2.0	=	average	C
1.5	=	below average but passing	D+
1.0	=	well below average but passing	D
.0	=	failing	F
IN	=	Incomplete	—
W	=	Withdrawn	—
WF	=	Withdrawn failing	F
AU	=	Audit	—
CR	=	Credit	—

NOTE: A quality point average of 3.20 for a semester qualifies a full-time student for Dean's List status.

INCOMPLETE GRADES

The grade of Incomplete (I) is given only if at least 80% of the course work has been completed at the time of discontinuance due to illness or similar disability. Incomplete grades must be made up within eight weeks after the opening of the following semester in which the student registers. The "I" becomes an "F" grade if the student fails to make up the work and fails to take the Final Examination within the prescribed time limit. Incomplete grades do not affect a student's dismissal or retention by the College.

Failures in required courses must be made up. The failure (Grade "O") in any course is removed from the cumulative average upon receipt of a passing grade in that course. However, the cancelled failure shows on the record.

QUALITY POINTS, REQUIREMENTS AND ACADEMIC PROBATION SCHEDULE

The student's quality point ratio shall be cumulative, semester by semester.

END OF SEMESTER	YEAR	PROBATION	DISMISSAL
1	FRESHMAN	NOT APPLICABLE	NOT APPLICABLE
2	FRESHMAN	1.50-1.74	BELOW 1.50
3	SOPHOMORE	1.50-1.74	BELOW 1.50
4	SOPHOMORE	1.75-1.99	BELOW 1.75
5	JUNIOR	1.75-1.99	BELOW 1.75
6	JUNIOR	NO PROBATION	BELOW 2.00
7	SENIOR	NO PROBATION	BELOW 2.00
8	SENIOR	NO PROBATION	BELOW 2.00

Dean's List rank is a cumulative index of 3.2 or better.

WITHDRAWAL FROM A COURSE

Students may withdraw from a course during the first two weeks of the semester without penalty by notifying the instructor and the Registrar, using a form obtainable from the Registrar's office. Between the end of the second and the end of the twelfth week of classes, they may withdraw by obtaining the permission of the instructor and the Academic Dean; students withdrawing from Teacher Education courses will see the Dean of Teacher Education; students who withdraw during this period will receive a grade of "W". Any student who fails to follow these procedures will automatically receive an "F" (grade "0") for the course.

Minimum course load for full-time students is 12 semester hours. Anyone taking fewer than 12 semester hours will not be eligible for veterans' benefits, certain armed forces programs, certain scholarships, Dean's List, etc.

WITHDRAWAL FROM COLLEGE

A student must report to the appropriate Associate Dean of Students and obtain a withdrawal form. This form must be properly completed and returned to the office of the Associate Deans.

Failure to follow this procedure will result in a W/F grade in all courses.

PARKING REGULATIONS

Parking facilities at Fitchburg State College are limited, but are being gradually expanded.

Commuting students are required to obtain identification stickers if they wish to park in student lots on campus.

There are no parking areas assigned to resident students. Juniors and senior residents whose curricula require travel to nursing and teaching assignments should confer with the Student Personnel Office.

More specific information is contained in the booklet entitled "Motor Vehicle Registration."

DEGREE PROGRAMS

UNDERGRADUATE CURRICULUM

Students in all of the College's undergraduate degree programs must fulfill both a General Education requirement of required and elective courses, and the courses in their major fields. Students in human services, medical technology, nursing, and teacher education have formal off-campus professional experiences as a part of their degree requirements. Students must have the approval of their departmental faculty advisors in planning their academic programs.

GENERAL EDUCATION

The General Education program constitutes a core curriculum to be taken by all students. As indicated in more detail below, it allows a rather wide choice of courses within a variety of academic fields. The purpose of this program is to provide opportunity for each student to have personal experience of various kinds of human knowledge, all of which contribute to the development of a fully educated person. With this broad background, it is expected that a student's subsequent choice of courses and of areas of specialization will be well informed. Courses, both required and elective, are in the areas of Natural Sciences, Mathematics, Social and Behavioral Sciences, and Humanities. All students complete 60 semester hours*(sh) in General Education.

*Semester hours indicate the academic credit given for class meetings. Thus a college course meeting for three lecture hours a week for a semester (one half an academic year) carries three semester hours of credit toward graduation when successfully completed. Two hours of laboratory will equal one hour of lecture in terms of semester hours credit.

	Semester Hours
A. Required Courses	
1. English Composition I and II (or exemption)	6
2. Basic Speech (or exemption by examination)	3
3. Health and Physical Fitness	3
4. A non-credit examination on the federal and state constitution (or equivalent academic requirements as authorized by the Social Sciences Department), must be taken to satisfy Massachusetts General Laws of Education (Chapter 3, Section 20).	
B. Distribution of Additional General Education Courses (See respective programs for General Education prerequisites.)	
1. Humanities Group	15
2. Social and Behavioral Sciences Group	15
3. Science/Mathematics Group (4 semesters of course work)	12-16

N.B. In meeting requirements B. (1,2,3), no more than 8 sh in any single discipline, as defined below, may be used.

4. Elective General Education courses to complete 60 sh in the General Education program.

Humanities Group of Disciplines	*Social and Behavioral Sciences Group of Disciplines*	*Science/Math Group of Disciplines*	*Other Discipline*
Art	*History	Mathematics	Physical Education
*History	Economics	Biology	
Music	Geography	Chemistry	
Literature	Government/Pol. Sci.	Computer Science	
Speech	Psychology	Physics	
French	Sociology/Anthropology	Physical Science (Physical Science cannot be used if either Chemistry or Physics is used)	
Spanish		Earth Science/Astronomy/Meterology/Geology	
German			
Russian			
Philosophy			

*N.B. Credit earned for any history course, except HI 88 and HI 90, may be counted under either Humanities or Social and Behavioral Sciences but not both.

GENERAL REQUIREMENTS FOR SOME DEGREE PROGRAMS

BACHELOR OF ARTS DEGREE FOREIGN LANGUAGE REQUIREMENT

Where a foreign language for the Bachelor of Arts degree is required by a Department students must be proficient at the second-year college level.

BACHELOR OF SCIENCE DEGREE IN SECONDARY EDUCATION
Professional Sequence for All Secondary Education Majors

		Sem. Hrs.
ED 61	Successful Practices in Secondary Education	3
IM 24	Design, Preparation, and Production of Instructional Materials	3
	Special Methods in Major Areas	3
	Student Teaching in Secondary Schools	12
		Total 21 Sem. Hrs.
ED 64	*Reading in the Secondary School	3 Sem. Hrs.

*Required of English Majors only, who must complete 24 hours in their professional sequence.

Behavioral Sciences Sequence

The following Behavioral Science courses are common to all secondary education majors.

		Sem. Hrs.
PY 23	Adolescent Psychology	3
PY 95	Tests and Measurements	3
		Total 6 Sem. Hrs.

BACHELOR OF SCIENCE DEGREE IN ELEMENTARY EDUCATION
Specialization for Elementary Major

All Elementary majors must select and complete a specialization from one of following areas: Art, Behavioral Sciences, Foreign Language, Geography, History, Language Arts, Mathematics, Music, or Science. Requirements for these specializations are found below.

Art Specialization

Students in the Elementary Curriculum who wish to specialize in Art may do so by electing courses under the guidance of the Art Department.

Behavioral Sciences Specialization

Students in the Elementary Curriculum who wish to specialize in Behavioral Sciences may do so by electing 24 semester hours under the guidance of the Behavioral Sciences Department.

Foreign Language Specialization

Students in the Elementary Curriculum who wish to specialize in French or Spanish may do so by attaining the minimum proficiency level of FR 31 or FR 34 or SP 31 or SP 34 and taking either FR 88 or SP 88.

Geography Specialization

Students in the Elementary Curriculum who wish to specialize in Geography may do so by electing 15 semester hours of Geography under the guidance of the Geography faculty, from the Geography elective offerings.

History Specialization

Students in the Elementary Curriculum who wish to specialize in History may do so by electing 15 semester hours of History under the guidance of the Social Sciences Department, from the History elective offerings.

Language Arts Specialization

Students in the Elementary Curriculum who wish to specialize in Language Arts may do so by electing the following under the guidance of the Elementary Education Department:

ED 40, 41
EN 80
PY 15, 16

Mathematics Specialization

Students in the Elementary Curriculum who wish to specialize in Mathematics can do so by electing 21 semester hours of Mathematics under the guidance of the Mathematics Department. Interested students should contact the elementary specialist advisor in the Mathematics Department for information and advice in planning a program of study. Courses elected to fulfill the requirements of the mathematics specialization are usually chosen from among CS 10, MA 10, MA 11, MA 12, MA 13, MA 20, MA 21, MA 23, MA 25, MA 26, MA 29, MA 30, MA 31, and MA 32.

Music Specialization

Students in the Elementary Curriculum who wish to specialize in Music may do so by electing the following under the guidance of the Music Faculty:

MU 10, 22 (or equivalent), 83 or 80, 42, 43, 44, 45
Three semesters of any combination of MU 41 and/or 40
Two Music Electives

Science Specialization

Students in the Elementary Curriculum who wish to specialize in Science may do so by electing 15 semester hours of science under the guidance of the Biology or Chemistry or Physics Departments.

Elect 15 hours from the following:

BI 10, 11, 20, 29, 21, 25, 26, 23, 31
CH 11, 12
GE 21, 25
PH 11, 12
SC 11, 12

UNDERGRADUATE EVENING SESSION

Since 1963 a program leading to the Bachelor of Science degree in Industrial Science has been available to qualified high-school graduates now in business or industry.

In cooperation with the Day Session of the College, the Evening Session also offers a series of courses in a sequential development that helps part-time students work for degrees in Education or Liberal Arts. These courses are also open to full-time students. Part-time students realize that eventually they must transfer into the day session to complete the requirements of their degree. Additional information can be secured by writing the Director of the Evening Session.

SUMMER SESSION

The Division of Graduate and Continuing Education offers two five-week Summer Sessions on the undergraduate and graduate levels, offering courses from the Freshman level through the Master's Degree. The Summer Session offers morning and evening classes, full library services, and opportunities for residence hall living. The Session features varied workshops, practicums, and outdoor environmental laboratories.

GRADUATE EDUCATION

The Division of Graduate and Continuing Education offers two degree programs in keeping with its prime purpose of providing opportunities for professional and scholarly advancement to the educational personnel of Central New England. This it does in the form of a Master of Education Degree which permits specialization in eleven different vocational and educational areas. It also offers the Master's of Arts in Teaching (M.A.T.) degree in English. Graduate courses are also offered for people who do not choose to enroll in either Master's Degree Program. The Graduate Division believes that it should assist in the development of educational leadership to advance the quality of education in its geographical area.

Inquiries concerning admission procedures in the Graduate Division may be addressed to the Director of Continuing Education.

SPECIFIC DEGREE REQUIREMENTS FOR MAJORS

Total semester-hour requirements for degrees in specific majors vary from department to department. All degrees require at least 120 semester hours.

Biology, Bachelor of Science in Education, Secondary

(124 semester hours — 30 semester hours in Biology)

GENERAL EDUCATION	**12 sh**
English Composition I & II	6
Speech	3
Health & Fitness	3
State & Federal Const. Prof.	
SOCIAL SCIENCES	**15 sh**
General Psychology	3
Adolescent Psychology	3
HUMANITIES	**15 sh**
BIOLOGY	**30 sh**
General Botany	3
General Zoology	3
Introductory Ecology	3
Genetics	3
Cell Biology	3
Developmental Biology	3
Biology Electives	12
RELATED MATH/SCIENCE REQUIREMENTS	**28 sh**
Mathematics (2 courses at or above level of Math 12)	6
Chemistry	
General Chemistry I & II	8
Organic Chemistry I & II	8
Physics	
Introductory Physics I & II	6
PROFESSIONAL REQUIREMENTS	**24 sh**
Tests & Measurements	3
Successful Practices in Secondary Education	3
Design, Prep. & Prod. of Instructional Materials	3
Biology Methods	3
First Aid	cr
Student Teaching	12

Biology, Bachelor of Arts

(120 semester hours — 30 semester hours in Biology)

GENERAL EDUCATION	**12 sh**
English Composition I & II	6
Speech	3
Health & Fitness	3
State & Federal Const. Prof.	
SOCIAL SCIENCES	**15 sh**
HUMANITIES (6 sh of foreign language requirements may be applied)	**15 sh**
FOREIGN LANGUAGE (Proficiency at 2nd yr. level. If waived, to be replaced by free electives)	**0-12 sh**
BIOLOGY	**30 sh**
General Botany	3
General Zoology	3
Introductory Ecology	3
Genetics	3
Cell Biology	3
Developmental Biology	3
Biology Electives	12
RELATED MATH/SCIENCE REQUIREMENTS	**28 sh**
Mathematics (2 courses at or above level of Math 12)	6
Chemistry	
General Chemistry I & II	8
Organic Chemistry I & II	8
Physics	
Introductory Physics I & II	6
FREE ELECTIVES	**14-20 sh**

Biology, Bachelor of Science

(120 semester hours — 30 semester hours in Biology)

GENERAL EDUCATION	**12 sh**
English Composition I & II	6
Speech	3
Health & Fitness	3
State & Federal Const. Prof.	
SOCIAL SCIENCES	**15 sh**
HUMANITIES	**15 sh**
BIOLOGY	**30 sh**
General Botany	3
General Zoology	3
Introductory Ecology	3
Genetics	3
Cell Biology	3
Developmental Biology	3
Biology Electives	12
RELATED MATH/SCIENCE REQUIREMENTS	**28 sh**
Mathematics (2 courses at or above level of Math 12)	6
Chemistry	
General Chemistry I & II	8
Organic Chemistry I & II	8
Physics	
Introductory Physics I & II	6
FREE ELECTIVES	**20 sh**

Biology/Environmental Science, Bachelor of Science

(128 semester hours — 30 semester hours in Biology)

GENERAL EDUCATION	**12 sh**
English Composition I & II	3/3
Speech	3
Health & Fitness	3
State & Federal Const. Prof.	
SOCIAL SCIENCES	**15 sh**
Economics	3
Environmental Law	3
Urban Planning	3
HUMANITIES	**15 sh**
Philosophy	3
Writing for the Specialist	3
Photography or Drawing	3
BIOLOGY	**30 sh**
General Botany	3
General Zoology	3
Introductory Ecology	3
Genetics	3
Cell Biology	3
Developmental Biology	3
Biology Electives	12
RELATED SCIENCE/MATH REQUIREMENTS	**37 sh**
Mathematics (2 courses at or above level of Math 12)	6
Computer Science	3
Chemistry	
General Chemistry I & II	8
Organic Chemistry I & II	8
Physics	
Introductory Physics I & II	6
Earth Science/Geology	6
ENVIRONMENTAL SCIENCE	**10 sh**
Seminar in Environmental Science	1
Field Techniques in Environmental Science	6
Electives in Environmental Science	3
FREE ELECTIVES	**9 sh**

Chemistry, Bachelor of Science in Education, Secondary

(120+ semester hours — 27 semester hours in Chemistry)

GENERAL EDUCATION (60 sh minimum)	
English Composition I & II	3/3
Speech	3
Health and Fitness	3
State & Federal Const. Prof.	
Math/Science	**17 sh**
Physics I & II	4/4
*Math (Calculus I & II)	3/3
Modern Physics (recommended)	3
Social Sciences	**15 sh**
Humanities	**15 sh**
BEHAVIORAL SCIENCES	**3 sh**
Tests & Measurements	3
**General Psychology	3
**Adolescent Psychology	3

*Prerequisite: Algebra and Elementary Functions
**May be applied to the Social Sciences category.

CHEMISTRY	**29 sh**
General Chemistry	4/4
Organic Chemistry	4/4
Quantitative Analysis	4
Physical Chemistry	4
Instrumental Analysis	3
CHEMISTRY ELECTIVES	
Natural Products Chemistry	3
Advanced Inorganic Chemistry	3
Independent Study	3
PROFESSIONAL	**21 sh**
Successful Practices in Secondary Education	3
Design, Preparation, and Production of Instrumental Materials	3
Chemistry Methods	3
Student Teaching	12
First Aid	cr.
FREE ELECTIVES	**3 sh**

Chemistry, Bachelor of Arts

(120+ semester hours — 34 semester hours in Chemistry)

GENERAL EDUCATION (60 sh minimum)	
English Composition I & II	3/3
Speech	3
Health and Fitness	3
State & Federal Const. Prof.	
Math/Science	**17 sh**
Physics I & II	4/4
Math (Calculus)	3/3
Modern Physics (recommended)	3
Social Sciences	**15 sh**
Humanities	**15 sh**
(6 sh of foreign language requirements may be applied.)	6
Electives (From Gen. Ed Area)	**6 sh**
OTHER DEGREE REQUIREMENTS	
Foreign Language	
German I & II	3/3
German III & IV	3/3
CHEMISTRY	**34 sh**
General Chemistry	4/4
Organic Chemistry I & II	4/4
Quantitative Analysis	4
Physical Chemistry I & II	4/4
Instrumental Analysis	3
Advanced Inorganic Chemistry	3
CHEMISTRY ELECTIVES	
Independent Study	3
FREE ELECTIVES (9-15 sh)	

Chemistry, Bachelor of Science

(120+ semester hours — 34 semester hours in Chemistry)

GENERAL EDUCATION (60 sh minimum)	
English Composition I & II	3/3
Speech	3
Health and Fitness	3
State & Federal Const. Prof.	
Math/Science	**20 sh**
Introduction to Computers I	3
Introduction to Computers II	3
Physics I & II	4/4
Math (Calculus)	3/3
Modern Physics (recommended)	3
Electives (From Gen. Ed. Area)	**6 sh**
Social Sciences	**15 sh**
Humanities	**15 sh**
(6 sh of foreign language requirements may be applied.)	6
CHEMISTRY	**34 sh**
General Chemistry	4/4
Organic Chemistry I & II	4/4
Quantitative Analysis	4
Physical Chemistry I & II	4/4
Instrumental Analysis	3
CHEMISTRY ELECTIVES	
Independent Study	3
FREE ELECTIVES (9-15 sh)	

Computer Science, Bachelor of Science

(120+ semester hours — 39 semester hours in Computer Science)

GENERAL EDUCATION (60 sh minimum)	
English Composition I & II	3/3
Speech	3
Health and Fitness	3
State & Federal Const. Prof.	
Math/Science	**14 sh**
Calculus I & II	3/3
General Physics I & II	4/4
Social Sciences	**15 sh**
Humanities	**15 sh**
Electives	**4 sh**
COMPUTER SCIENCE	**39 sh**
Introduction to Computers I, II	6
Programming I, II	6
Information Systems I & II	6
Systems Programming I	3
Programming III	3
Electives	15
RELATED ELECTIVES (Math, Physics)	21

Early Childhood — Bachelor of Science in Education

(120+ semester hours — 24 semester hours in Early Childhood)

GENERAL EDUCATION (60 sh minimum)	
English Composition I & II	3/3
Speech	3
Health and Fitness	3
State & Federal Const. Prof.	
Math/Science	**12-16 sh**
Social Sciences	**15 sh**
Humanities	**15 sh**
Electives (From Gen. Ed. Area)	**6 sh**
BEHAVIORAL SCIENCES	**8 sh**
Block I	4
Block II	4
*General Psychology	3

*May be applied to the Social Sciences category

EARLY CHILDHOOD	**24 sh**
Foundations Early Childhood I	4
Foundations Early Childhood II	4
Curriculum I (Basic Reading)	4
Curriculum II (Fine & App. Arts)	4
Curriculum III (Language Arts)	4
Curriculum IV (Sci., Math, Soc. Stud.	4
First Aid	cr.
Student Teaching	12
FREE ELECTIVES (Any related areas)	**16 sh**

Elementary, Bachelor of Science in Education

(121 semester hours — 34 semester hours in Elementary)

GENERAL EDUCATION (60 sh minimum)	
English Composition I & II	3/3
Speech	3
Health and Fitness	3
State & Federal Const. Prof.	
Math/Science	**12-16 SH**
Math	3
Social Sciences	**15 sh**
Humanities	**15 sh**
Art of Music	3
Electives (From Gen. Ed. Area)	**6 sh**
BEHAVIORAL SCIENCES	**3 sh**
Test & Measurements	3
*General Psychology	3
*Child Psychology	3

*May be applied to the Social Sciences Category

ELEMENTARY	**34 sh**
Prin. & Prac. in Education	3
Foundations of Education	3
Reading in Elementary	3
Math Concepts	3
Science in Elementary	3
Music in Elementary	2
Art in Elementary	2
I.A. in Elementary	2
Phys. Ed. in Elementary	1
First Aid	cr.
Student Teaching	12
SPECIALIZATION	**15+sh**
SUGGESTED FREE ELECTIVES	**9 sh**
Introduction to Geography	3
Geography U.S. & Canada	3
Introduction to Sociology	3
Phycho-Social Problems of Urban Children	3
Learning Disabilities	3
Children's Literature	3
Guidance	3

English, Bachelor of Science in Education, Secondary

(120+ semester hours — 30 semester hours in English)

GENERAL EDUCATION (60 sh minimum)

English Composition I & II	3/3
Speech	3
Health and Fitness	3
State & Federal Const. Prof.	
Math/Science	**12-16 sh**
Social Sciences	**15 sh**
Humanities	**15 sh**
Electives (From Gen. Ed. Area)	**6 sh**

BEHAVIORAL SCIENCES

Adolescent Psychology	3
Test and Measurements	3
*General Psychology	3

*May be applied to Social Sciences category.

ENGLISH **30 sh**

Required:

English Composition I	Gen. Ed.
English Composition II	Gen. Ed.
Eng. Lit. I	3
Eng. Lit. II	3
English Electives	18

PROFESSIONAL **24 sh**

Successful Practices in Secondary Education	3
Design, Preparation, and Production of Instructional Materials	3
Reading in Secondary	3
Methods of Teaching English	3
Student Teaching	12
First Aid	cr.

FREE ELECTIVES
(To fill 120 sh)

English, Bachelor of Arts

(120+ Semester hours — 36 semester hours in English)

GENERAL EDUCATION (60 sh minimum)

English Composition I & II	3/3
Speech	3
Health and Fitness	3
State & Federal Const. Prof.	
Math/Sciences	**12-16 sh**
Social Sciences	**15 sh**
Humanities (6 sh of foreign language requirements may be applied.)	
Electives (From Gen. Ed. Area)	**6 sh**

OTHER DEGREE REQUIREMENTS

Foreign Language (Proficiency at 2nd yr. level. If waived, to be replaced by free electives.)	**6-12 sh**

ENGLISH **36 sh**

Required:

Eng. Composition I (Gen. Ed.)	3
Eng. Composition II (Gen. Ed.)	3
Eng. Literature II	3
English Electives	**24 sh**

FREE ELECTIVES (To fill 120 sh)

ENGLISH

Departmental Honors

Those students seeking Honors in English must have advanced junior standing and an overall grade point of 3.0, with a 3.4 in English. For further information apply to the English Department.

Geography, Bachelor of Arts or Science

(120+ semester hours — 36 semester hours in Geography)

GENERAL EDUCATION (60 sh minimum)

English Composition I & II	3/3
Speech	3
Health and Fitness	3
State & Federal Const. Prof.	
Math/Science	**12/16 sh**
Social Sciences	**15 sh**
Introductory to Geography	3
Humanities	**15 sh**
Electives (From Gen. Ed. Area)	**6 sh**

Note: B.A. degree includes foreign language proficiency at 2nd year college level. 6 sh of foreign language study may be used to satisfy Humanities requirement.

Geography **36 sh**

The Geography major may elect work in one of the following areas:

(1) Earth and/or Environment Sciences
(2) Urban-Community development and/or public Service
(3) Area Development

Courses are structured so as to prepare the student for employment or graduate work.

Geography, Bachelor of Science in Education, Secondary

(120+ semester hours — 30 semester hours in Geography)

GENERAL EDUCATION (60 sh minimum)

English Composition I & II	3/3
Speech	3
Health and Fitness	3
State & Federal Const. Prof.	
Math/Science	**12-16 sh**
Social Sciences	**15 sh**
Introduction to Geography	3 sh
*General Psychology	3
Humanities	**15 sh**
Electives	6 sh

BEHAVIORAL SCIENCE

*General Psychology	3
*Adolescent Psychology	3
Tests & Measurements	3

Students may meet the state certification requirements for teaching Earth Science, as well as Geography, by taking 18 sh in related courses which should be chosen after consultation with a member of the geography faculty.

GEOGRAPHY **30 sh**
(3) sh in General Education

PROFESSIONAL **21 sh**

Successful Practices in Secondary Education	3
Design, Preparation, and Production of Instructional Materials	3
Methods of Teaching Geography	3
First Aid	cr.
Student Teaching	12

FREE ELECTIVES (To complete 120 sh)

*General Psychology and Adolescent Psychology may be applied in either Social Science or Behavioral Science categories.

History, Bachelor of Science in Education, Secondary

(120+ semester hours — 33 semester hours of History)

GENERAL EDUCATION (60 sh minimum)

English Composition I & II	3/3
Speech	3
Health and Fitness	3
State & Federal Const. Prof.	

Math/Science	**12-16 sh**
Social Sciences	**15 sh**
Humanities	**15 sh**
Electives (From Gen. Ed. Area)	**6 sh**

BEHAVIORAL SCIENCE

*General Psychology	3
*Adolescent Psychology	3
Tests & Measurements	3

HISTORY **33 sh**

HI 10 & 12 (General Education)	3/3
HI 21 & 22	3/3

In addition each student must take 12 sh of History electives and an additional 9 sh of History or courses related to History (government, political science, economics, history of literature).

PROFESSIONAL **21 sh**

Successful Practices in Secondary Education	3
Design, Preparation, and Production of Instructional Materials	3
Methods of Teaching History	3
First Aid	cr.
Student Teaching	12

FREE ELECTIVES (To fill 120 sh)

*General and Adolescent Psychology may be applied in either Social Science or Behavioral Science categories.

History, Bachelor of Arts or Science

(120+ semester hours — 36 semester hours in History)

GENERAL EDUCATION (60 sh minimum)

English Composition I & II	3/3
Speech	3
Health & Fitness	3
State & Federal Const. Prof.	

Math/Science	**12-16 sh**
Social Sciences	**15 sh**
Humanities (6 sh of foreign language requirements may be applied.)	**15 sh**
Electives (From Gen. Ed. Area)	**6 sh**

*Note: The B.A. degree includes foreign language proficiency at 2nd year college level. 6 sh of foreign language may be used to satisfy humanities requirement. Students who intend to do graduate work in History should devote serious study to at least one foreign language.

HISTORY **36 sh**

HI 10 & 12 (General Education)	3/3
HI 21 & 22	3/3

In addition each student must take 15 sh of History electives and an additional 9 sh of History or courses related to History.

FREE ELECTIVES
(To fill 120 sh)

History, Bachelor of Arts

(Concentration in European Studies)

GENERAL EDUCATION (60 sh minimum)

(Same as under Bachelor of Arts or Science above).

MODERN EUROPEAN LANGUAGE

Proficiency in a modern European language at the third-year college level.

HISTORY

HI 10 & 12 (General Education)	6 sh
HI 21 & 22	6 sh

In addition each student must take 12 sh of history electives (at least 9 sh of which must be European History) and 15 sh of related courses (at least 3 sh each in Geography, Art, Philosophy, and Literature) chosen from the list of courses applicable to the European Studies concentration.

FREE ELECTIVES (to fill 120 sh)

Human Services, Bachelor of Science

(120+ semester hours minimum — 42 semester hours in Human Services)
Students in the Human Services program follow the model below:

GENERAL EDUCATION	**60 sh**
Human Services Majors	**45 sh**
Human Services Core	**21 sh**
Introduction to Human Services	3
Abnormal Psychology	3
Field Work I	6
Field Work II	6
Interviewing and Report Writing	3
Human Services Sub-areas	**12 sh*+**
Corrections	
Mental Health	
Community Development(Social Work, Welfare, Poverty)	
School Psychology	
Related Areas	**12 sh**

Students take courses in related areas; e.g., economics, political science, special education, health, recreation, etc., based upon their career interests, to be worked out and approved by Human Services advisor.

FREE ELECTIVES	**15 sh**

*Students may specialize in one of these areas, or take a generic approach with courses in several of the areas.

+ Other specialties which could be developed in this model are:
Speech and Communication Disorders
Rehabilitation Counseling
Industrial Psychology
Law Enforcement

This program is designed to provide both conceptual (class work) and experimental (field work) preparation for entry level positions in the Human Services (Social Work, Counseling, Corrections, Probation, School Psychology, etc.). All students share a common core of courses (Intro. to Human Services, Abnormal Psychology, and Field Work in the Behavioral Sciences). Students take additional courses plus courses in other departments in accordance with their career goals. This allows for maximum individual choice while still providing a basic background to enable students to go into many graduate programs and/or a variety of job possibilities. Students must work closely with their advisor. It is strongly recommended that students work as volunteers or as employees in community agencies, to gain extra experience as well as letters of recommendation for inclusion in their placement folders.

Industrial Arts, Bachelor of Science in Education, Secondary

(131 semester hours — 46 semester hours in Industrial Arts)

GENERAL EDUCATION (60 sh minimum)	
English Composition I & II	3/3
Speech	3
Health and Fitness	3
State & Federal Const. Prof.	
Math/Science	**12-16 sh**
Social Sciences	**15 sh**
Humanities	**15 sh**
BEHAVIORAL SCIENCES	**6 sh**
*General Psychology	3
*Adolescent Psychology	3
Professional	**23 sh**
Foundations of Industrial Arts I	2
Principles & Practices in I.A.	3
Student Teaching	10
Foundations of Industrial Arts II	3
Philosophy of Education	3
Seminar in Industrial Arts	2
First Aid	cr.

INDUSTRIAL ARTS	**46 sh**
Shops (46 sh) Freshman Yr (16 sh)	
Wood I	2
Metal I	2
Drawing I	2
Graphic Arts I	2
Power Mech. I	2
Electricity I	2
General Shop I	2
Design	2
Sophomore Year (18 sh)	
Wood II	3
Metal II	3
Drawing II	3
Graphic Arts II	3
Power Mech. II	3
Electricity II	3
Jr. and Sr. Yrs. (12 sh)	
Structures	3
General Shop II	3
Shop Electives	**6 sh**

*May be applied to the Social Sciences category.

Mathematics, Bachelor of Science

(120 semester hours — 33 semester hours in mathematics)

GENERAL EDUCATION (60 sh minimum)	
English Composition I & II	3/3
Speech	3
Health & Fitness	3
State & Federal Const. Prof.	
Math/Science	**12-16 sh**
Social Sciences	**15 sh**
Humanities	**15 sh**
Electives (from Gen. Ed.)	**6 sh**
MATHEMATICS	**33 sh**
Calculus I	3
Calculus II	3
Calculus III	3
Calculus IV	3
Linear Algebra I	3
Abstract Algebra I	3
Mathematics Electives	15

Electives must be chosen from 30 or 40 level courses of which at least three must be at the 40 level. 90 level undergraduate or 800 level graduate courses may be substituted for 40 level courses.

FREE ELECTIVES	**27 sh**

Mathematics, Bachelor of Science in Education, Secondary

(120 semester hours — 33 semester hours in mathematics)

GENERAL EDUCATION (60 sh minimum)	
English Composition I & II	3/3
Speech	3
Health & Fitness	3
State & Federal Const. Prof.	
Math/Science	**12-16 sh**
Behavioral Sciences	**15 sh**
General Psychology	3
Adolescent Psychology	3
Humanities	**15 sh**
Electives (from Gen. Ed.)	**6 sh**
PROFESSIONAL	**25 sh**
Successful Practices in Secondary Education	3
Design, Preparation and Production of Instructional Materials	3
Tests and Measurements	3
Methods and Materials in Secondary Mathematics	3
Student Teaching	12
First Aid	1
MATHEMATICS	**33 sh**
Functions	3
(Functions may be waived with departmental consent)	
Calculus I	3
Calculus II	3
Calculus III	3
Calculus IV	3
Linear Algebra	3
Abstract Algebra I	3
Geometry I	3
Prob. & Stat. I	3
Mathematics Electives	6

Electives must be chosen from 30 or 40 level courses.
90 level undergraduate or 800 level graduate courses may be substituted for 40 level courses.

FREE ELECTIVES	**2**

Mathematics, Bachelor of Arts

(120 semester hours — 33 semester hours of mathematics)

GENERAL EDUCATION (60 sh minimum)	
English Composition I & II	3/3
Speech	3
Health & Fitness	3
State & Federal Const. Prof.	
Math/Science	**12-16 sh**
Social Sciences	**15 sh**
Humanities	**15 sh**
Electives (from Gen. Ed.)	**6 sh**
MATHEMATICS	**33 sh**
Calculus I	3
Calculus II	3
Calculus III	3
Calculus IV	3
Linear Algebra	3
Abstract Algebra I	3
Mathematics Electives	15

Electives must be chosen from 30 or 40 level courses of which at least three must be at the 40 level.
90 level undergraduate or 800 level graduate courses may be substituted for 40 level courses.

FREE ELECTIVES	**27 sh**

OTHER DEGREE REQUIREMENTS
The B.A. degree requires foreign language proficiency at the second year college level. 6 sh of foreign language may be used toward satisfying the Humanities requirement.

Medical Technology, Bachelor of Science*

(128 semester hours — 18 semester hours in Biology, 23 semester hours in Chemistry minimum)

GENERAL EDUCATION (60 sh minimum)	
English Composition I & II	6
Speech	3
Health & Fitness	3
State & Federal Const. Prof.	
Humanities	**15 sh**
Social Sciences	**15 sh**
SCIENCE/MATH	
Biology	**18 sh**
Genetics	3
General Microbiology	3
Human Biology	3
Biochemistry	3
Biology Electives	6
Chemistry	**20 sh**
General Chemistry I & II	8
Organic Chemistry I & II	8
Analytical Chemistry	4
Physics/Math	**12 sh**
Mathematics (2 courses at or above level of Math 12)	6
Introductory Physics I & II	6
MEDICAL TECHNOLOGY / PROFESSIONAL	**33 sh**
Intro. to Medical Technology	1
Clinical Chemistry	8
Clinical Microbiology	8
Clinical Hematology	8
Immunohematology	8
FREE ELECTIVES	**3 sh**

*Note: In order to receive a B.S. degree, Medical Technology students must complete a practicum at an affiliated hospital. In order to be admitted to the Junior year in the Medical Technology Program a student must have a minimum cumulative average of 2.7 in Math, Biology, and Chemistry courses. The college cannot guarantee the placement of any candidate in one of its affiliated hospitals.

Bachelor of Science in Nursing

(127 semester hours — 67 semester hours in Nursing)

GENERAL EDUCATION (57 sh minimum)	
English Composition I & II	3/3
Speech	3
State & Federal Const. Prof.	
Math/Science	**12-16 sh**
Anatomy & Physiology I & II	3/3
General Chemistry I & II	3/3
Social Sciences	**15 sh**
General Psychology	3
Introduction to Sociology	3
Human Growth & Development	3
Humanities	**15 sh**
Electives (From Gen. Ed. Area)	**6 sh**
OTHER DEGREE REQUIREMENTS	
Survey of Micro-organisms	3
NURSING*	**67 sh**
Introduction to Nursing	2
Foundations of Nursing I	4
Foundations of Nursing II	4
Found. of Interpersonal Rel.	2
Intro. to Pharmacology	2
Nutrition	3
Medical-Surgical Nursing	12
Maternal-Child Health Nurs.	12
Principles of Management	3
Adv. Med.-Surg. Nursing	9
Community Health Nursing	6
Psychiatric-Mental Health Nurs.	6
Nursing Seminar	2

*Students are responsible for providing their own transportation for clinical practice

NOTE: As of September, 1975, students will be required to have the same quality point ratio in nursing courses at the end of each semester as in other courses in order to progress.

Physics, Bachelor of Arts

(123 semester hours — 41 semester hours in Physics)

GENERAL EDUCATION (60 sh minimum)

English Composition I & II	3/3
Speech	3
Math/Science	**12-16 sh**
Calculus I & II	3/3
Social Sciences	**15 sh**
Humanities (6 sh of foreign lang. requirements may be applied)	**15 sh**
Electives (From Gen. Ed. Area)	**4-6 sh**

OTHER DEGREE REQUIREMENTS

Foreign Language (Proficiency at 2nd yr. level. If waived, to be replaced by free electives.)	**6-12 sh**
FREE ELECTIVES	**21 sh**
PHYSICS	**41 sh**
General Physics I & II	4/4
Health and Fitness	3
State & Federal Const. Prof.	
Modern Physics	3
Math Methods in Physics I	3
Math Methods in Physics II	3
Math Methods in Physics III	3
Electronic Physics I & II	4/4
Intermediate Mechanics	3
Vibrations and Waves	3
Seminar in Physics	1
Advance Lab in Physics	3
1 additional course in Physics from elective list below	3
TOTAL	41

ELECTIVE (Choose 1):
Quantum Mechanics
Statistical Mech. & Thermodynamics
Atomic and Nuclear
Solid State
Electronic Physics III
Electricity and Magnetism

Physics, Bachelor of Science

(123 semester hours — 44 semester hours in Physics)

GENERAL EDUCATION (60 sh minimum)

English Composition I & II	3/3
Speech	3
Health and Fitness	3
State & Federal Const. Prof.	
Math/Science	**12-16 sh**
Calculus I & II	3/3
General Chem.	4/4
Social Science	**15 sh**
Humanities	**15 sh**
Electives from **General Education**	**4-6**
Free Electives	**21 sh**

PHYSICS

General Physics I, II	8
Modern Physics	3
Math Meth. in Physics I	3
Math Meth. in Physics II	3
Math Meth. in Physics III	3
Electronic Physics I, II	8
Intermediate Mechanics	3
Vibrations & Waves	3
Seminar in Physics	1
Advanced Lab	3
2 additional courses in Physics (from elective list below)	6
TOTAL	44

ELECTIVES (Choose 2)
Quantum Mechanics
Atomic and Nuclear
Statistical Mech. and Thermodynamics
Solid State
Electricity and Magnetism
Electronic Physics III

Physics, Bachelor of Science in Education, Secondary

(121 semester hours — 38 semester hours in Physics)

GENERAL EDUCATION (60 sh minimum)

English Composition I & II	3/3
Speech	3
Health and Fitness	3
State & Federal Const. Prof.	
Math/Science	**12-16 sh**
Calculus I & II	3/3
Social Sciences	**15 sh**
*General Psychology	3
Humanities	**15 sh**
Electives (From Gen. Ed.)	**4-6 sh**

BEHAVIORAL SCIENCES

*Adolescent Psychology	3
*Tests & Measurements	3

*May be applied to the Social Sciences category.

PROFESSIONAL **21 sh**

Successful Practices in Secondary Education	3
Design, Preparation, and Production of Instructional Materials	3
Physics Methods	3
First Aid	cr.
Student Teaching	12

Physics **32 sh**

General Physics I & II	4/4
Modern Physics	3
Math Methods in Physics I	3
Math Methods in Physics II	3
Electronic Physics I	4
Electronic Physics II	4
Physics for Sec. Teachers	3
Seminar in Physics	1
1 additional course from elective list below	3
TOTAL	32

ELECTIVE (Choose 1):
Math Methods in Physics III
Intermediate Mechanics
Vibrations and Waves
Quantum Mechanics
Statistical Mech. & Thermodynamics
Atomic and Nuclear
Solid State
Advanced Lab
Electronic Physics III

Psychology, Bachelor of Arts or Science

(120+ semester hours — 37 semester hours in Psychology)

GENERAL EDUCATION (60 sh minimum)

English Composition I & II	3/3
Speech	3
Health & Fitness	3
State & Federal Const. Prof.	
Math and/or Science	**12-16**
Social Science (may include Behavioral Science)	**15**
Humanities	**15**
Electives (from Gen. Ed.)	6
Foreign Language*	**6**
PSYCHOLOGY	**37**

PHASE I: All courses required.

General Psychology	3
Quantitative Methods	3
Intro. to Research Methods	3
Freshman Orientation seminar	1

PHASE II: At least one course required in each area.

QUANTITATIVE

Psychological Statistics	3
Psychological Testing	3
Tests & Measurements	3

DEVELOPMENTAL

Human Growth & Development	3
Child Psychology	3
Adolescent Psychology	3
Advanced Child Psychology	3
Educational Psychology	3
Behavioral Science in ECE-I	4
Behavioral Science in ECE-II	4
Psych. of Speech & Communication	3
Psychology of Death & Dying	3
Cognitive Development	3
Psychology of Personality	3

ADAPTIVE BEHAVIOR

Principles of Guidance	3
Social Psychology	3
Abnormal Psychology	3
Psychology of Personality	3
Industrial & Organizational Psych	3
Introduction to Speech Pathology	3
Group Dynamics	3
Psychology of Death & Dying	3
Psycho-Social Approaches to Mental Health	3
Psycho-Social Problems of Urban Children	3
Psychological & Social Perspectives On Women	3

RESEARCH EXPERIENCE (w/wo lab)

Experimental Psychology	3
Advanced Child Psychology	3
Perception	3
Psychology of Learning	3
Physiological Psychology	3

LEARNING

Perception	3
Cognitive Development	3
Educational Psychology	3
Psychology of Learning	3
Learning Theory & its Applications	3

RELATED ELECTIVES

Seminars in Psychology. Independent Studies and appropriate courses from Sociology or Human Services, as well as courses from the above areas, may be used as electives.

PHASE III: One course required.

History & Systems of Psychology	3
Senior Seminar in Psychology	3

FREE ELECTIVES **17-21**

*Foreign Language Requirements for the Bachelor of Arts are as follows: Proficiency at the second year level.
If waived, six semester hours may be replaced by free electives. Six hours of Foreign Language requirements may be applied to Humanities under the General Education requirements.

Special Education, Bachelor of Science in Education

(120+ semester hours — 39 semester hours in Special Education including Student Teaching)

GENERAL EDUCATION (60 sh minimum)	
English Composition I & II	3/3
Speech	3
Health and Fitness	3
State & Federal Const. Prof.	
Math/Science	**12-16 sh**
Social Sciences	**15 sh**
Humanities	**15 sh**
BEHAVIORAL SCIENCES	**6 sh**
General Psychology	3
Child Psychology	3
**Abnormal Psychology	3
**Psych. of Personality	3
**Speech Pathology	3
**Tests & Measurements	3
**Principles of Guidance	3
SPECIAL EDUCATION	**33 sh**
N/N of Except. Children I & II	3/3
*Curriculum for Child with special needs	3
*Methods Teaching in S.E.	3
*Reading Methods in S.E.	3
*Ident. Diag. of Learning Disabilities	3
Math in S.E.	3
*Student Teaching	12
Professional	
See Course Description, SE 70 re: Integrated Professional Program	
Electives (Choose 2)	**6 sh**
Curr. for Trainables	3
Sec. Prog. M.R.	3
Prog. Dev. of Learn. Disab.	3
Early Learn. Exper.	3
N/N of Multiple Handicapped	3
Community Resources	3
Problems in Language Arts	3

*Must be taken as a block; prerequisite is N/N of Exceptional Children.

**Are also Professional Courses.

The Professional Education Program

Nature and Needs of Exceptional Children 6 Credits
(sophomore year — 1st semester) (2 semester course)

Integrated Program 15 credits
- Curriculum in Special Education
- Methods in Special Education
- Identification and Diagnosis of Learning
- Disabilities Reading in Special Education
- Communication Arts

Student Teaching 12 credits

Criteria for Admission:

By the end of the sophomore year, students will have completed some of the general educational requirements of the college. Also included in the completed requirements would be the following professional courses:

- Nature and Needs of Exceptional Children — Special Education Dept.
- General Psychology — Behavioral Science Dept.
- Child Psychology — Behavioral Science Dept.
- Theories of Learning (1974-1975) — Behavioral Science Dept.
- Tests and Measurements — Behavioral Science Dept.
- Home Arts — Special Education Dept.
- Industrial Arts — Industrial Arts Dept.

If these requirements have been met, the student will enter the professional block first semester, Junior Year. General Education requirements can be completed during first and/or second semester Senior Year.

Transfer students who have not completed the professional course requirements by the end of their sophomore year will enter the integrated program first semester Senior Year and will do student teaching second semester, Senior Year.

Sociology, Bachelor of Arts or Science

(121 + semester hours — 37 semester hours in Sociology)

General Education (60 sh minimum)

English Composition I & II	3/3
Speech	3
Health & Fitness	3
State & Federal Const. Prof.	

Remainder of the 36 credit hours in Sociology courses along with the appropriate prerequisites, are to be chosen in conjunction with the student's advisor who will offer guidelines and recommend courses in view of potential employment, graduate work and general interest.

Sociology	**37 sh**
Intro. to Sociology	3
*Social Research	3
*Social Theory	3
Orientation Seminar in Behavioral Science	1

*Strongly recommended

*Foreign Language Requirements for the Bachelor of Arts are as follows: Proficiency at 2nd year level. If waived, to be replaced by free electives. 6 sh of Foreign Language Requirement may be applied to Humanities under the General Education Requirements

Course Descriptions

INCLUDING DEPARTMENTAL REQUIREMENTS AND EXPLANATION OF COURSE NUMBERS

01-19 First courses in given area of general education series
20-29 Second courses in given area of general education series
30-79 Elective courses
80-89 Professional courses
90-99 Independent study and honor courses

Arabic numbers at end of course descriptions represent semester hours and clock hours in that order.

Example

AR 10 Survey of Art Forms 1 3-3

The 3-3 represents 3 semester hours, 3 clock hours. The term semester hour is used to designate one class or equivalent laboratory unit meeting.

ART

AR 10 Survey of Art Forms I 3-3
Significant art forms in Western Civilization from 1800 to present.

AR 12 Survey of Art Forms II 3-3
Significant art forms in Western Civilization from the earliest times to the Renaissance.

AR 14 Drawing 3-6
A studio course, emphasis being primarily upon the exploration of line and mass.

AR 17 Design 3-6
The pictorial elements: line, color, shape and texture as a preparation for the areas of drawing, painting and sculpture.

AR 18 American Art 3-3
Architecture, painting, sculpture and the decorative arts from Colonial times to the present.

AR 19 Renaissance Painting 3-3
Western Painting from 1250 to 1600 with emphasis on standards which culminated to the 20th century.

AR 20 Painting 3-6
An introduction to painting.

AR 22 Sculpture 3-6
Experiments with sculpture media emphasizing understanding of the basic principles of design and form.

AR 24 Advanced Sculpture 3-6
A continuation of AR 22 with a deepening emphasis upon individual problems. Prerequisite: AR 22.

AR 25 Advanced Painting 3-6
A continuation of AR 20 with a deepening emphasis upon individual problems. Prerequisite: AR 20

AR 27 Pictorial Design 3-6
A studio course in painting with special emphasis upon formal structure. Prerequisite: AR 25.

AR 28 Art in Elementary Education 2-4
Practice of art as well as observation and discussion of the philosophy of art education in the elementary grades.

AR 90 Independent Study in Art 3 hours credit
For selected students, upon approval of both department head and advising instructor.

BEHAVIORAL SCIENCES

Psychology

PY 10 General Psychology 3-3
The science of human behavior. Scientific method, maturation, motivation, emotions, sensation, learning, personality, and adjustment.

PY 13 Introduction to Quantitative Methods 3-3
Introduction to the scientific method, measurement in research, and the interpretation of scientific literature. Prerequisite: PY 10.

PY 14 Introduction to Research Methods 3-3
Research design including consideration of sampling procedures, questionnaire design, methods of observation and reporting. Prerequisite: PY 10 & PY 13.

PY 15 Introduction to Speech Pathology 3-3
An orientation to speech pathology by identification and referral procedures for primary speech problems; examination and observation of speech therapy procedures. Clinical point of view is stressed. Prerequisite: PY 10 or PY 14.

PY 16 Psychology of Speech and Communication 3-3
This course provides information for judging speech behaviors of self and others. Concepts of speech, language and communication; healthy speaking and listening behaviors; non-verbal communication; animal communication; linguistic and psycholinguistic theory. Prerequisite: PY 10 or PY 14

PY 17 Speech Pathology Principles and Practicum
The course will provide students from allied disciplines with beginning skills for remediation of milder communication disorders in children. Under qualified supervision and from appropriate research, students will assist in diagnostic evaluations, case history information plus other report writing, and aspects of speech therapy planning and implementation. Prerequisite: PY 15.

PY 18 Quantitative Methods I
The purpose of this course is to develop an understanding of the value and philosophy of scientific methodology and to enable the student to start intelligently interpreting the research literature. Included among its elements are the nature and functions of measurements and methodologies, the defing of commonly used statistical procedures and concepts, and the applications and use of the computer in research.

PY 20 Human Growth and Development 3-3
A study of the physical, physiological, social, and psychological development of the individual — from conception to old age. Prerequisite: PY 10 or PY 14.

PY 21 Child Psychology 3-3
Emphasis on the theories of development, and the application, understanding, and guiding of development in normal children. Prerequisite: PY 10 to PY 14.

PY 22 Advanced Child Psychology 3-3
An expansion and continuation of the major topics in child psychology. Opportunity for individual projects and experiences with children will be provided. Prerequisite: PY 21.

PY 23 Adolescent Psychology 3-3
Adolescent as a cultural phenomenon and as a stage of development; understanding the impact of current trends, physical and sexual development of emerging youth in their search for identity. Prerequisite: PY 10 or PY 14

PY 25 Psychological and Social Perspectives on Women
Objectives involve an increased awareness of the dimensions of self and personhood in relation to society and the examination and analysis of issues relative to current debate concerning the status of women and the humanistic concerns of feminism.

PY 30 Psychology of Personality 3-3
Dynamic factors in personality formation are followed through approximate sequences of the life period. Prerequisite: PY 10 or PY 14.

PY 32 Psychology of Death and Dying
Through lectures, readings, discussion, and media, the student will explore psychological theory, research, and personal feelings concerning the dying process, suicide, grief, sudden death, and dying as it influences persons at different developmental stages. Prerequisite: PY 10 or PY 14.

PY 35 Abnormal Psychology 3-3
Normal, neurotic, and psychotic behavior and methods of psychotherapy will be reviewed. Techniques for maintaining optimal psychological health. Prerequisite: PY 10 or PY 14.

PY 36 Mental Health: A Social Psychological Perspective 3-3
The course will feature workshop-discussions on the social, legal, political & ethical factors contributing to various views of mental health, social psychological theories, & social changes & interventions. Prerequisite: PY 10, PY 35, & consent of instructor.

PY 40 Psychological Statistics 3-3
Introduction to applied statistics; statistical treatment of data; descriptive statistics; basic inferential statistics up to and including analysis of variance. Prerequisite: PY 10 or PY 14.

PY 41 Experimental Psychology 4-4
The scientific method; experimental designs and laboratory methods in behavioral science, emphasizing laboratory experiments and scientific communication of results. Prerequisite: PY 40 or permission of the instructor.

PY 42 Physiological Psychology 3-3
Relationship between behavior and the structure and function of the organism's nervous system; emphasis on the physiological basis of learning, motivation, emotion, motor activity and perception. Prerequisite: PY 10 or PY 14.

PY 43 Perception 3-3
Principles related to man's awareness of his world. Topics to be considered will include psychophysics, the relationship between motivation and perception, the sensory bases of perception and localization in space. Prerequisite: 15 credits in Psychology.

PY 45 Psychological Testing 3-3
Laboratory course in the theory, administration, and interpretation of group and individual tests used in studying certain behavior characteristics. Prerequisite: PY 40 or PY 75.

PY 48 History and Systems of Psychology 3-3
A consideration of contemporary psychology as seen in its historical perspective. The development of psychological concepts and theories will be traced from their antecedents in philosophy, theology, and the physical sciences. Prerequisites: Junior or Senior standing, 15 credits in Psychology.

PY 50 Psychology of Learning 3-3
Principles and theories of learning; classical conditioning, operant conditioning, verbal learning, acquisition of motor skills. Prerequisite: PY 10 or PY 14.

PY 55 Group Dynamics 3-3
The nature and dynamics of interpersonal relationships as revealed in typical group settings such as classrooms, workshop seminars, and other discussion-oriented groups. Emphasis will be on both content and process as demonstrated in a laboratory learning environment. Prerequisite: PY 10 or PY 14.

PY 60 Industrial Psychology 3-3
Psychological principles and techniques used in selection and placement of employees: psychological tests, worker motivation and adjustment, training, morale, accident prevention, job efficiency. Prerequisite: PY 10 or PY 14.

PY 65 Social Psychology 3-3
Psychological constructs and concepts applied to the interaction between human beings. Prerequisite: PY 10 or PY 14.

PY 70 Educational Psychology 3-3
A psychological analysis of the educational process, including learning, motivation, socialization, testing, and cognitive, moral, and language development. Prerequisite: PY 10 or PY 14.

PY 71 Learning Theory and Its Applications 3-3
The principles and theories of learning, as derived by both the laboratory psychologist and the educational researcher, as applied to various social settings, e.g. the classroom, the family, etc. Prerequisite: PY 10.

PY 73 Psycho-Social Problems of Urban Children 3-3
The experience of the inner-city child in relation to housing, schools, and teachers; emergence of "the alternative school" and other attempts to help children. Students will participate in a two-hour weekly seminar and work for at least five hours in the community. Prerequisite: PY 10 or PY 14.

PY 75 Tests and Measurements 3-3
A study of basic statistical concepts and techniques in measurement, with application to teacher-made tests and standardized tests used in education and psychology. Prerequisite: PY 10 or PY 14.

PY 77 Principles of Guidance 3-3
Introductory course for students interested in developing their helping relationship skills in a one-to-one relationship and/or group setting. Prerequisite: PY 10 or PY 14.

PY 90 Independent Study 3-3
Independent Study is to be offered primarily to outstanding students of Junior or Senior standing and requires approval of the professor and of the Chairman of the Behavioral Sciences department. Independent Study may take the form of: Special advanced reading programs; problem identification and research; assistantships; acquisition of professional skills. Under no circumstances will independent study be substituted for regularly scheduled courses.

PY 95 Seminar in Psychology 3-3
Seminar dealing with contemporary problems in psychology. Specific topics will vary from semester to semester, depending upon the instructor. Prerequisite: Variable — permission of the instructor.

Human Services

HS 10 Introduction to Human Services 3-3
A survey of the fields (psychology, social work, probation, rehabilitation), agencies (welfare, correction, family services, mental health, nursing homes), and career opportunities in the Human Services. Prerequisites: PY 10 or PY 14 and SO 10 plus permission of the instructor.

HS 75 Fundamentals of Interviewing and Report Writing 3-3
This course will provide students with basic skills needed in the Human Services, primarily interviewing and report writing. Prerequisites: HS 10, PY 35, and permission of the instructor.

HS 80 and 81 Field Work in the Behavioral Sciences 12-25
Students will work in an agency under the supervision of an agency staff member. In addition to the field experience, there are class meetings to develop skills and share field experiences.
There are two types of placements: (a) students will work in an agency two days a week throughout the school year beginning in September, for six credits each semester; (b) a block placement of 25 hours per week for one semester either in the Fall or in the Spring, for 12 credits.
Students must pre-register with the instructor in the beginning of the semester PRIOR TO the semester in which they plan to enter an agency; i.e., students planning a Fall placement must pre-register early in the previous Spring. Students must have had previous volunteer experience prior to enrolling in Field Work.
Prerequisites: HS 10, PY 35, PY 85, permission of Instructor, and prior volunteer experience.

BEHAVIORAL SCIENCES INTERDEPARTMENTAL

EP 10 Behavioral Science in Early Childhood I 4-5
Principles, patterns, and theories of human development and learning; principles and techniques of naturalistic and standardized child study. Observation, recording, synthesis, and interpretation of child behavior within a practicum setting. Prerequisite: PY 10 or PY 14.

EP 11 Behavioral Science in Early Childhood II 4-5
Related to EP 10. (EP 10 and EP 11 cannot be taken simultaneously.)

Child Development Center
The Child Development Center, sponsored jointly by the Behavioral Science Department, Instructional Media Department, and McKay School, provides on-going discussions, seminars, and investigations of the various attributes of the learner, of the learning environment, and of the agents of learning (parents and teachers), as these may affect learning.
Resources of Child Development Center are available for in-service training programs, which will provide opportunity for advanced students to enroll in seminars and to participate in research and progress.

BEHAVIORAL SCIENCES

BS 10 Orientation Seminar in Behavioral Sciences 1-1
Will include the following areas of study: career options in psychology, disciplines within Behavioral Sciences, study skills, advisory processes (including meetings with advisors)

Sociology

SO 10 Introduction to Sociology 3-3
Structure and process in the organization of groups, with consideration of development, maintenance and change variables.

SO 15 Sociology of Language 3-3
A study of the influence of several factors on immigration modes including family, peer group, mass media, variations in interpersonal verbal and non-verbal norms. Prerequisite: SO 10

SO 26 Sociological Theory 3-3
Social philosopher precursors; social scientific theorists from Comte to Parsons; current sociological schools Prequisite: SO 10

SO 44 Urban Sociology 3-3
The structure and function of cities in history and modern life.

SO 45 Community Analysis 3-3
The community as a social system. Field Study: observation and analysis of local communities.

SO 50 Race and Ethnic Relations 3-3
An analysis of concepts and research useful for an understanding and evaluation of relations among ethnic and racial groups with particular emphasis on current black/white relations in America. Prerequisite: SO 10

SO 51 Future Studies: Sociological Perspectives 3-3
A study of various systems currently in use for making future projections and familiarity with the current major writings in this area. Prerequisite: SO 10

SO 62 Sociology of Religion
Structure and function of religious organization, beliefs, and practices. Current issues in American religion.

SO 63 Sociology of the Family 3-3
Structure and function of the family; trends and practical solutions to problems in family living.

SO 65 Industrial Sociology 3-3
A sociological study of industrial organizations and the process of industrialization. The impact of technology and related factors on work organizations will be analyzed. Prerequisite: SO 10

SO 70 Social Problems 3-3
Consideration of major social problem areas: energy, family, government, poverty, health, etc. from the viewpoint of gathering data for possible approaches.

SO 72 Social Movements and Collective Behavior 3-3
Theories of conflict and collective behavior applied to current movements seeking alteration in the social roles; study of panics, razes, riots, demonstrations and rebellions. Prerequisite: SO 10

SO 75 Criminology 3-3
A survey of the field of criminology including such topics as professional crime, organized crime, homicide, sex offenses, white collar crime, property offenses, juvenile delinquency, and the administration of criminal justice. Prerequisite: SO 10

SO 76 Juvenile Delinquency 3-3
A critical examination of the major sociological theories of delinquency including an analysis of empirical studies. Attention will also be given to the juvenile judicial system and proposed treatment programs. Prerequisite: SO 10

SO 85 Introduction to Anthropology 3-3
The study of cultures: Technology, economics, kinship, political structures, languages, and religion.

SO 90 Independent Study 3-3
Prerequisite: Approval of both advising instructor and department chairman.

BIOLOGY

BI 10 Introduction to Life Science I 3-4
The course focuses on the history, philosophy and content of biology as a science. Laboratory work includes experiences that emphasize problem solving by the student. Primarily for the non-major. 2 hrs lecture, one 2-hr lab per week. Offered: Fall semester.

BI 11 Introduction to Life Science II 3-4
Continuation of BI 10. 2 hrs lecture, one 2-hr lab per week. Offered: Spring semester. Prerequisite: BI 10 or permission of instructor.

BI 12 Anatomy and Physiology I 3-4
Structure and function of the human organism on the cellular, tissue, organ, and system levels. The laboratory emphasizes both physiology and the dissection of preserved mammalian specimens. 2 hrs lecture, 2 hrs lab per week. Offered: Fall semester.

BI 13 Anatomy and Physiology II 3-4
A continuation of BI 12. 2 hrs lecture, 2 hrs lab per week. Offered: Spring semester. Prerequisite: BI 12.

BI 20 General Zoology 3-4
Investigation of the different types of animals in freshwater pond, freshwater stream, bog, and marine rocky intertidal communities. Students will be responsible for preparing a laboratory report on each habitat and the anatomy and behavior of a representative sample of its organisms. Biological principles and major contribution of each major animal phylum. 1 hr lecture, 3 hrs lab/field trips per week.

BI 21 General Botany 3-4
A survey of the plant kingdom with special emphasis on algae, bryophytes, ferns, gymnosperms, flowering plants and fungi. Evolutionary development of the above forms, their geographic distribution, taxonomy, and their economic importance to man and other animals. 2 hrs lecture, 2 hrs lab per week.

BI 22 Plant Physiology 3-4
Individually paced integration of plant structure and function emphasizing physiology of the integrated plant: water relations; transpiration and translocation, mineral nutrition, photosynthesis, respiration, growth hormones, differentiation and morphogenesis. 2 hrs of conference, 2 hrs lab per week, plus additional hours. Offered: Fall semester (alternate years). Prerequisites: BI 21 and General Chemistry.

BI 23 Introductory Ecology 3-4
Survey of major ecological concepts and methodology as a basis for further investigations of the dynamic relationship between organisms and their environment. Field and laboratory work emphasize problem identification, formulation of hypothesis, data collection, and analysis and interpretation of results in terms of their biological implications. 2 hrs lecture, 2 hrs lab/field trips per week. Offered: Fall semester. Prerequisite: BI 10 or 20 or 21 or permission of instructor.

BI 24 Advanced Ecology 3-4
Quantitative-study of morphological, physiological and behavioral ecology; population relationships; productivity; energetics of community structure. Special attention given to graphical and statistical analysis of results and to computer simulation of ecosystems. 2 hrs lecture, 2 hrs lab/field trips per week, plus some additional hours. Offered: Spring semester. Prerequisite: BI 23 or permission of instructor.

BI 25 Laboratory Techniques in Biology 3-4
Experiments and demonstrations to provide familiarity with procedures and activities performed in school and college laboratories as well as in clinical laboratories. Techniques used in hematology, bacteriology, botany, histology, mycology, cytology and embryology, with emphasis on the careful preparation of various types of microscope slides. 4 hrs lab per week, plus some additional hours. Prerequisites: BI 20 and BI 21 or permission of instructor.

BI 26 Conservation of Natural Resources 3-3
An introductory exposure to applied ecology, primarily for non-majors, intended to develop a disciplined sensitivity to human environmental interactions. Individual projects will require the identification of specific conservation problems in local communities, their sources, and proposals of practical means for their solution. 3 hrs. lecture/lab per week. Offered: Fall semester.

BI 27 Survey of Microorganisms 3-4
Introduction to the biology of major groups of microorganisms: bacteria, viruses, protozoa and fungi, their role in nature and their relationship to man as agents of infectious diseases. Laboratory emphasizes principles and practices of aseptic techniques and diagnostic identification and culture of disease entities. 2 hrs lecture, 2 hrs lab per week, plus some additional time. Offered: Spring semester. Prerequisites: BI 13 and General Chemistry or permission of instructor.

BI 28 Genetics 3-4
Basic principles of biological information processing: Mendelian inheritance; sex determination; chromosome cytogenetics; linkage, recombination and genetic mapping; mutagenesis; molecular genetics and gene-enzyme relationships; population genetics and quantitative inheritance. Laboratory work includes study of mutational effects and analysis of crosses in maize, Drosophila, bacteria, viruses and man. 2 hrs lecture, 2 hrs lab per week, plus some independent project work. Prerequisites: BI 20 and/or BI 21.

BI 29 Marine Biology 3-4
Investigation of the distribution of the dominant animals and plants in a salt marsh, sand beach, tide pool, and rocky intertidal area. Data on physical and chemical factors of these habitats will be correlated with the composition, behavior and physiology of the flora and fauna of each habitat. 4 hrs of lecture/lab/field work per week, plus some additional hours. Offered: Fall semester (alternate years). Prerequisites: BI 20, BI 21 and BI 23.

BI 30 Parasitology 3-4
The morphology and diagnostic identification of representative groups of parasitic protozoa, helminths and arthropods, and their functional life-cycle and pathogenic relationships to animal and human hosts. Epidemiology, pathology and control and treatment of important parasitic diseases. 2 hrs lecture, 2 hrs lab per week. Offered: Spring semester (alternate years). Prerequisites: BI 20 and BI 44.

BI 31 Ornithology 3-4
An inquiry into the life of birds. Emphasis on correlation of structure, function and behavior. Laboratory studies of external characters, anatomy and criteria for identification. Optional field trips. 2 hrs lecture, 2 hrs lab per week. Offered: Spring semester (alternate years). Prerequisite: BI 11 or BI 20 or permission of instructor.

BI 32 History of Biology 3-3
A thorough study of the origins, development and present status of the life sciences and medicine with special emphasis on fundamental biological concepts and theories, their philosophical background and evolutionary development. 2 hrs lecture, 1 hr discussion. Prerequisite: BI 11 or equivalent.

BI 33 Entomology 3-4
Anatomy, habits, life histories and identification of insects and some related arthropods. Laboratory work includes preparation of a representative collection of adult and larval forms from terrestrial and aquatic environments with emphasis on techniques for identification of these forms. 4 hrs lecture/laboratory, plus additional hours for field trips and identification. Offered: Fall semester (alternate years). Prerequisite: BI 20 or permission of instructor.

BI 34 Limnology 3-4
A study of fresh waters and their inhabitants: survey of protists, invertebrates, vertebrates and plants collected from local waters and their ecological interrelationships as determined by biological, physical and chemical parameters. 1 hr. lecture, 3 hrs lab/field trips per week. Offered: Fall semester (alternate years). Prerequisites: BI 21 and BI 23 or permission of instructor.

BI 35 Plant Taxonomy 3-5
Classification of higher plants in accordance with evolutionary principles and trends. Laboratory is devoted to the techniques of plant identification with emphasis on the terminology and use of botanical keys. Field trips for collecting representative elements of the local flora and preparation of an herbarium. 1 hr lecture, 4 hrs lab per week, plus some independent project work. Offered: Fall semester (alternate years). Prerequisite: BI 21 or permission of instructor.

BI 36 Biology of Algae 3-4
Collection and identification of common algae found in the New England area. Emphasis on freshwater forms, but some study of marine algae as well. Distribution of algal species will be correlated with physical and chemical factors in their habitats. Laboratory will include study of algal physiology and reproduction as well as techniques for cultivation. 1 hr lecture, 3 hrs lab/field trips per week.

BI 40 Developmental Biology 3-4
Central problems of developmental and regulatory biology: fertilization; synthesis of macromolecules; organelle formation; cell differentiation; morphogenesis and maintenance of tissue and organ functions in the mature organism; metamorphosis; regeneration. Laboratory study will emphasize basic developmental systems in both plants and animals which are particularly favorable for analysis. 2 hrs lecture, 2 hrs lab per week. Offered: Spring semester. Prerequisites: BI 20, BI 21, BI 28, and Organic Chemistry.

BI 41 Biochemistry 3-5 to 7
Individually paced, mastery-oriented introduction to the chemistry of biologically important molecules and their metabolism and regulation: water, proteins lipids, carbohydrates, nucleic acids and their components. Laboratory emphasizes manual and instrumentated techniques for isolation, qualitative and quantitative analysis of macromolecules and the kinetics and induction of enzymes. 2-4 hrs conference, 3 hrs lab per week. Offered: Spring semester. Prerequisite: at least one semester of Organic Chemistry.

BI 42 Human Biology 3-4
Anatomy and physiology of the cells, tissues, organs and organ systems of the human organism and their functional interrelationships. (Intended primarily for juniors and seniors who are majoring in Biology or Medical Technology.) 4 hrs of lecture/lab/demonstrations. Prerequisites: BI 20 and at least one semester of Organic Chemistry; BI 43 is strongly recommended.

BI 43 Cell Biology 3-4
Ultrastructure and cytochemistry of cell organelles in relation to their biochemistry and function. Cell bioenergetics, metabolism, and cell division; evolution of cellular molecular machinery. Laboratory includes techniques for measuring cell growth and metabolism, cell fractionation, and an examination of cellular diversity. 2 hrs lecture, 2 hrs lab per week. Offered: Fall semester. Prerequisites: BI 20, BI 21, BI 28 and Organic Chemistry.

BI 44 General Microbiology 3-4
Structure, nutrition and growth of bacteria; characterization of representative bacteria, fungi, viruses and protozoa and their genetic and metabolic peculiarities. Immunological techniques and the immune response in man. Laboratory work includes aseptic technique, isolation and cultivation of microbes, staining techniques and diagnostic metabolic reactions. 2 hrs lecture, 2 hrs lab per week, plus additional time. Offered: Fall semester. Prerequisite: Organic Chemistry or permission of instructor.

BI 45 Medical Microbiology 2-4
General principles of infection and immunity, disease etiology, laboratory diagnosis of specific pathogens, and the epidemiology of microbial diseases as illustrated primarily by bacterial pathogens. 2 hrs lecture and 4 hrs lab per week during first half of semester. Offered: Spring semester. Prerequisite: BI 44.

BI 46 Microbial Ecology 2-4
Study of microbial environments, populations and ecosystems. Mutual interactions of microbes as well as interactions with macroorganisms and the effects of the microbe on macroecology. 2 hrs lecture and 4 hrs lab per week during second half of semester. Offered: Spring semester. Prerequisite: BI 44.

BI 47 Environmental Health 3-3
Investigations into that aspect of public health that concerns itself with forms of life, chemical substances, environmental conditions and other forces in the surroundings of man that exert an influence on his health and well-being. 3 hrs of lecture/discussion and occasional field trips. Offered: Fall semester. Prerequisite: BI 11 or equivalent or permission of instructor.

BI 88 Biology Teaching Methods 3-3
Methods and philosophical background for teaching of modern biological science. (This course is a prerequisite for student teaching and should be taken the semester prior to student teaching; consult p. for other requirements for student teaching.) 1 hr public school assisting, 1 hr discussion, 1 hr independent study per week. Offered: Fall semester. Prerequisites: Junior or senior standing, ED 61, PY 23 and permission of instructor.

BI 90 Independent Study 1 to 3 credits
Laboratory or other independent research under the guidance and supervision of one or more faculty members. A comprehensive term paper is required for successful completion of the project. Offered: Fall and Spring semesters. Prerequisites: Junior or senior standing, 15 credits of biology and special permission of the departmental curriculum committee.

CHEMISTRY

CH 10 General Chemistry for Nurses 3-4
One semester fundamental course for non-degree nurses.

CH 11 General Chemistry I 4-5
The fundamental laws and theories of chemistry such as atomic structure, the periodic table, electrochemistry, descriptive inorganic chemistry, the gas laws, solutions, and chemical binding. Chemical calculations are emphasized.

CH 12 General Chemistry II 4-5
Continuation of (and prerequisite): CH 11 or the equivalent.

CH 13 Chemistry I 3-4
Fundamentals of chemistry for non-science majors.

CH 14 Chemistry II 3-4
Continuation of (and prerequisite): CH 13 or the equivalent.

CH 20, 21 Organic Chemistry I and II 4-6 each
Properties of organic compounds are discussed in terms of their molecular structures and reaction mechanisms. Recommended for chemistry majors, and/or others contemplating graduate study and for those who feel the need for a solid theoretical foundation. Prerequisites for CH 20: CH 11 and 12. Prerequisite for CH 21: a grade of 2.0 or better in Organic Chemistry I.

CH 24, 25 Introduction to Organic Chemistry I and II 4-5 each
A survey of the major classes of organic compounds — their chemical and physical properties. Reduced emphasis on theoretical foundations permits inclusion of topics in natural products chemistry and bio-organic application. Prerequisites: CH 11 and 12.

CH 30 Quantitative Analysis 4-6
Emphasis on theory and application of Quantitative Analysis. The lectures stress chemical equilibrium, solubility product, complexometric formation, oxidation-reduction, and stoichiometric calculations. Prerequisite: CH 11 and 12 or the equivalent.

CH 32 Physical Chemistry I 4-5
The underlying principles of chemistry from a physical chemistry standpoint. Kinetic theory, theories of the structure of matter, theory of electrolytic solutions, electrochemistry, thermodynamics, kinetics. Prerequisite: CH 30 or the equivalent.

CH 33 Physical Chemistry II 4-5
Continuation of (and prerequisite): CH 32.

CH 35 Instrumental Analysis 3-5
Essentially a laboratory course in Instrumental Analysis including one hour lecture per week. Laboratory experiments include spectrophotometric, conductometric, potentiometric, and chromatographic analysis. Prerequisite: CH 32 or the equivalent.

CH 88 Chemistry Methods 3-3
Methods of teaching chemistry at the secondary level. Includes a survey of modern secondary science curriculum. Required of all Chemistry education majors. Prerequisite: IM 24.

Special Topics

Student and faculty availability determine the time of the following course offerings (not offered every year).

CH 36 Advanced Inorganic Chemistry 3-3
Valency theories, acid-base theories, reactions in non-aqueous solvents, complexation and chelation, physical measurements. Prerequisite: CH 32 or the equivalent.

CH 40 Natural Products Chemistry 3-6
Isolation, purification, and identification of pure compounds from a variety of naturally occurring substances. Special techniques will be introduced whenever feasible. Six hours of laboratory. Prerequisites: CH 20 and 21.

CH 41 Polymer Chemistry 3-6
An introduction to the synthesis and properties of macromolecules which also serves as an application of chemical principles to this interesting and important group of materials. Two hours of lecture and one four-hour laboratory period. Prerequisites: CH 20 and 21 or the equivalent.

CH 42 Qualitative Organic Analysis 3-7
Chemical and spectral methods are used to establish the structure and identity of single compounds and mixtures. One lecture hour and six hours of laboratory. Prerequisites: CH 20 and 21.

CH 43 Radiation Chemistry 3-3
Fundamentals of radiation chemistry, including radioactivity, atomic nuclei, nuclear reactions, activation analysis, reactors, and radiation detection and measurement, with emphasis on the use of radioactive materials in chemical applications. Prerequisites: CH 30, PH 14.

CH 90 Independent Study in Chemistry 3-6
Laboratory research under guidance of the Chemistry staff. Prerequisite: Permission of the instructor.

COMPUTER SCIENCE

CS 10 Computer Programming 3-3
This course is a general course in Computer Programming and will use a popular programming language such as BASIC as the basis for studies and activities with flowcharts, coding, program execution and debugging and an introduction to computer theory and systems. May be used for Math credit.

CS 15 Introduction to Computers I 3-3
Provides a broad foundation for the study of computers. Topics include: number system theory, computer character coding and arithmetic and a brief introduction to computer hardware design.

CS 16 Introduction to Computers II 3-3
Topics include: Computer Programming and programming languages. Basic assembly languages and an introduction to FORTRAN and COBOL. Prerequisite: CS 15.

CS 20 Numerical Methods and Computers I 3-3
Assumes knowledge of FORTRAN and/or FOCAL. Roots of equations, methods of numerical integration, ordinary differential equations, operations with matrices, curve fitting. Prerequisite: Two semesters of Calculus.

CS 21 Numerical Methods and Computers II 3-3
Fourier series, Tchebychev polynomials, difference methods, interpolation, partial differential equations. Prerequisite: CS 20.

CS 25 Programming I (FORTRAN) 3-3
The major portion of time will be spent learning and using the problem orientated language, FORTRAN. Course work includes: flow charting, coding, debugging, execution and documentation. Prerequisite: CS 16.

CS 26 Programming II (COBOL) 3-3
The major portion of time will be spent learning and using the programming language, COBOL. Course work includes: flow charting, coding, debugging, executing and documenting COBOL programs. Prerequisite: CS 16.

CS 27 Programming III 3-3
This course provides an introduction to currently used programming languages such as: PL/1, APL, SIMULA, ALGOL, JOVIAL, APT and others. Prerequisite: CS 16.

CS 30 Information Systems I 3-3
Topics include: an introduction to systems analysis including problem definition, form and report design, elementary sequential file structuring and data access techniques. Prerequisite: CS 26.

CS 32 Systems Programming I 3-3
The organization and software components of modern operating systems including: batch processing systems, I/O systems, file organization, accessing and management. Prerequisite: CS 25.

CS 34 Automation Techniques 3-3
Techniques for adaption of "on-line" and "off-line" computers to production type machines and control systems. Prerequisite: CS 16.

CS 36 Analog Computer Techniques 3-3
Programming applications and advanced techniques of analog computation including: magnitude and time sharing, scaling, non-linear elements and iterative solutions. Prerequisite: CS 16.

CS 40 Information Systems II 3-3
Advanced file structure and telecommunication systems including: tree structures, direct and indirect sequential file access techniques and display communication. Prerequisite: CS 30.

CS 42 Systems Programming II 3-3
The methods and techniques used in the design and implementation of interpreters and compilers. Prerequisite: CS 32.

CS 46 Analog Hybrid Computer Simulation
The use of Analog and hybrid computers as an engineering tool for systems design and evaluation. Prerequisite: CS 36.

CS 48 Computer Organization 3-3
Systems and subsystems of the basic computer operation and the role of each computer operation.

CS 50 Programming Practicum 3-3
Advanced programming with in depth study in a special area of interest. Prerequisite: Permission of instructor.

ECONOMICS

EC 10 Principles of Economics: Macro-economics 3-3
A study of the theory of employment, income, and growth. Stabilization policy and current problems in American capitalism are emphasized.

EC 12 Principles of Economics: Micro-economics 3-3
A study of the theory of the business firm. Efficiency in the allocation of resources is examined under conditions of pure competition, pure monopoly, monopolistic competition, and oligopoly. Prerequisite: EC 10.

EC 13 Consumer Economics 3-3
Theories of consumption and economic functioning; demand; consumer problems; standards of living; policies for protecting consumers and expanding consumption.

EC 14 Money and Banking 3-3
A study of the role of money, credit, and banking in the American economy. Special emphasis is placed on the applicability of monetary policy to the problems of economic stability.

EC 15 Economic Development 3-3
An examination into the problems of economic growth with particular reference to less developed countries; topics of discussion will include population development, foreign investment and aid, and the role of government. Investigation through case studies will be emphasized.

EC 16 Public Finance 3-3
A study of the principles of governmental expenditures and revenues. Attention is also devoted to the problems of public debt, fiscal policy, and inter-governmental fiscal relations, with particular reference to the United States.

EC 90 Independent Study in Economics
Open to students who have permission of the supervising instructor and the department. Course of study, meetings, and credit by arrangement.

EARLY CHILDHOOD, ELEMENTARY, AND SECONDARY EDUCATION

EARLY CHILDHOOD EDUCATION

ED 10 Early Childhood Foundations I 4-5
An introduction to aspects of the early childhood educator's future status such as: membership in a social institution, a multi-level organization, a profession, and the intellectual community. Required of Early Childhood Education Majors.

ED 20 Early Childhood Foundations II 4-5
Designed for those preparing to teach young children. Presents the students with a brief orientation to the developmental philosophy and goals of early childhood education. Presents methods and activities. Required of Early Childhood Education Majors.

EP 10 Behavioral Science in Early Childhood I 4-5
Study of principles, patterns, and theories of human development and learning as well as principles and techniques of naturalistic and standardized child study. Observation, recording, synthesis, and interpretation of the behavior of young children will occur within a practicum setting. Case studies will be written. Required of early childhood education majors. Prerequisite: General Psychology or Introduction to Psychology. Required for EDP II.

EP 11 Behavioral Science in Early Childhood II 4-5
Related to EP 10. (EP 10 and EP 11 cannot be taken simultaneously.)

ED 21 Reading in Early Childhood 4-5
Study of the techniques and procedures necessary for teaching reading in the primary grades. The practicum for the application of techniques is an integral part of the course.

ED 22 Language Arts in Early Childhood 4-5
The four components of verbal communication — listening, speaking, reading, writing; current materials and programs for developing language; use of literature in language and concept development; practicum for application of learning.

ED 24 Fine Arts in Early Childhood 4-5
The study of the integration of art, music and movement for young children using an interdisciplinary approach. Investigation of the objectives, methods and materials in the fine arts areas.

ED 31 Social Studies, Math and Science in Early Childhood 4-5
Emphasis is placed on the development and demonstration of instructional Techniques and Materials in Science, Math and Social Studies. Related classroom problems and expectations and philosophies of instruction are discussed.

ED 33 Case Studies of Young Children 3-3
Behavior and personalities of children. Student undertakes systematic studies involving gathering, interpreting data. Elective.

ED 30 Methods and Materials of Early Childhood Education 3-3
Physical, social, emotional development of children ages 3-8. Methods and activities used, evaluation of teaching techniques. Elective.

ED 40 Improvement of Reading 3-3
The recognition and correction of reading problems in the classroom. Each student is assigned a child to test and tutor. Practicum included in class time. Prerequisite: ED 63.

ED 41 Language Arts in the Elementary School 3-3
The four aspects of a total program in Language Arts, listening, speaking, writing and creativity, with a practicum of pre-professional experience.

ED 60 Principles and Practices in Education 3-3
The development of an understanding of the theoretical and practical demands of the teaching process is an integral part of the course. Required of Elementary Education Majors.

ED 61 Successful Practices in Secondary Education 3-3
Combination of theory and practice in a school setting. Required of Secondary Education Majors.

ED 63 Reading in the Elementary School 3-3
This course provides a background in the principles and techniques of teaching reading in the elementary grades. Emphasis is placed upon the organization of the reading program, instructional materials, procedures, and current practices in the teaching of reading. Practicum is included. Prerequisite: PY 21.

ED 64 Reading in the Secondary School 3-3
Investigation of the reading process. Discussion of current evaluative methods. Analysis of the reading skills and procedures for development. Required of Secondary English Majors. Prerequisites: PY 23, ED 60.

ED 65 Foundations of Education 3-3
A study of the historical and philosophical development important to modern-day education. Required of Elementary Education Majors.

ED 68 Individualized Reading 3-3
Philosophy, techniques and materials for developing an individualized Reading Program. Practicum included in class time. Prerequisite: ED 63.

ED 70 Parent Child Relations in Education 4-5
This course explores the role of the parent in the development of the child and how the parent relates to the educational system. This course will stress awareness of how parents stimulate the growth of behavioral trends in their children, as well as their usefulness as resources to improve the educational environment of the child.

ED 84 Student Teaching in Early Childhood Education 12-25
Each student is required to have a full semester of student teaching consisting of two experiences, one in a kindergarten and a second at the primary level.

ED 86 Student Teaching in Elementary Education 12-25
Each student is required to have a full semester of student teaching consisting of two experiences at the elementary education level.

ED 87 Student Teaching in the Secondary School 12-25
Students are assigned to cooperating schools for a semester of student teaching.

ED 88 Introduction to Learning Disabilities 3-3
A study of some of the causes of school learning disabilities at the Elementary level. Specific techniques and remediation exercises will be discussed. Prerequisite: ED 86 or permission of instructor.

ED 90 Independent Study in Elementary Education 3 sh
Provides the student with the opportunity of research with staff guidance in a problem in elementary education. Limited to juniors and seniors. Prerequisite: Permission of department.

ENGLISH

EN 10 English Composition I **3-3**
Practice, both oral and written, in expressing ideas with precision, clarity, and economy. The research essay. Critical reading.

EN 12 English Composition II **3-3**
Essentially a continuation of EN 10, but more advanced. Logic and the vocabulary of criticism. Prerequisite: a passing grade in EN 10. Prerequisite for all English electives: EN 10, EN 12.

Electives

EN 20 American Literature I **3-3**
Representative American writers from Colonial days through the Civil War.

EN 21 American Literature II **3-3**
Representative American writers since the Civil War.

EN 22 English Literature I **3-3**
British writers from the Old English period through the early Romantic writers of the late 18th century.

EN 23 English Literature II **3-3**
British writers since the Romantic movement.

EN 24 World Literature I **3-3**
European literary masterpieces from the beginning through the middle of the 17th century.

EN 25 World Literature II **3-3**
European literary masterpieces from the mid-17th century to the present.

EN 30 World Drama **3-3**
Significant and representative plays from the beginning to the modern period.

EN 31 Modern Drama **3-3**
The works of such playwrights as Ibsen, Chekhov, Sartre, Brecht, Ionesco.

EN 32 The World Novel to 1914 **3-3**
Significant novels representing various countries and periods as well as stages in the development of this literary form.

EN 33 The World Novel Since 1914 **3-3**
Modern novels are studied both aesthetically and as human documents.

EN 34 The Short Story **3-3**
Significant stories of some of the great writers of the Western world, showing the evolution of the short story form.

EN 35 Modern Poetry **3-3**
Representative modern poetry with the emphasis on American and English poets.

EN 36 Literary Criticism **3-3**
Critical theory and practice from Aristotle through the 20th century.

EN 40 The Middle Ages **3-3**
Literary forms that made their first appearance after the emergence of Middle English.

EN 41 Chaucer and His World **3-3**
Emphasis on the Centerbury Tales and their Medieval background.

EN 42 Shakespeare I **3-3**
Shakespeare's vision of politics, society, and history. Studies in the chronicles of English history and the image of heroism and kingship.

EN 43 Shakespeare II **3-3**
Shakespeare's vision of human destiny. Studies in the Comic and the Tragic.

EN 44 Baroque English Literature **3-3**
Baroque or metaphysical elements in seventeenth century literature from Donne to Vaughan, including Herbert, Crashaw, Marvell, Browne, Webster, and Middleton.

EN 45 Mythic Poetry of the English Renaissance 3-3
Visions of love and religion in Spenser, Donne, Herbert, and Milton, including *Paradise Lost.*

EN 46 Neoclassical Literature from Jonson to Congreve 3-3
Neoclassical elements in the works of Jonson and his "school" including a close study of Dryden and Restoration drama.

EN 47 Early Eighteenth-Century Literature 3-3
English literature from 1700 through 1745.

EN 48 Late Eighteenth-Century Literature 3-3
English literature from 1745 through 1800.

EN 49 Literature of the Romantic Period 3-3
Wordsworth, Coleridge, Byron, Shelley, Keats. Some prose writers such as Scott.

EN 50 The Nineteenth-Century English Novel 3-3
Significant novels demonstrating the changing cultural milieu and varying approaches of the genre during this period.

EN 51 Victorian Prose and Poetry 3-3
Study of major writers from 1832-1890, and their ideas on man's relationship to society in the face of industrialization and scientific progress.

EN 52 Decadence and Transition 3-3
Victorian literary standards collated with modern trends in poetry, prose, and drama.

EN 53 Twentieth-Century Irish Literature 3-3
Synge, Yeats, Joyce, O'Flaherty, O'Connor and O'Faolain, with some attention to minor figures of the so-called Irish Literary Renaissance.

EN 60 American Romanticism 3-3
Major New England romanticists with some emphasis on minor Transcendentalists.

EN 61 American Novel 1890-1945 3-3
A close examination of several representative works by major American novelists of this period.

EN 62 The American Novel Since 1945 3-3
A close analysis of seven or eight major novels.

EN 63 Major American Writers of the Twentieth Century 3-3
The varied creativity of American writers of fiction, drama, poetry, criticism, and the essay since World War I.

EN 64 The Black Author in the Modern World 3-3
Mainly U.S. writings.

EN 65 Other Trumpets: Literature of the Minorities 3-3
Significant writings by American Indians; Black, Mexican, Puerto Rican, Filipinos, and Oriental Americans: considered aesthetically and as social and political documents.

EN66 → Telling the Tale

EN 70 The Bible as Literature 3-3
A study of the style, narrative techniques, symbols, and historical setting of the Old and New Testament writers.

EN 71 Laughter, Comedy, and Joy 3-3
Studies in literary comedies and theories of comedy from various periods and genres.

EN 72 Novels of Politics and Revolution 3-3
Such novelists as Stendhal, Dostoevski, James, Zola, Conrad and others.

EN 73 Women and Literature 3-3
Emphasis on literature by and about women, including such authors as Ibsen, James, Stein, Woolf, Sexton, Plath and others.

EN 74 Occult in Literature 3-3
Spiritualism, witchcraft, demonology, extrasensory perception and other areas of the occult found in the works of Scott, Walpole, James, Hawthorne, Shakespeare, Wilde and others.

EN 75 Journalism 3-3
Readings in the mass media with individualized writing assignments. Some emphasis on the technical aspects of newspaper work and the methods of New Journalism.

EN 76 Creative Writing 3-3
For outstanding students who have completed EN 10 and 12. Upon approval of instructor.

EN 77 The Cinematic Eye 3-3
An exercise in democratic/personal film-making. Rock-bottom cost, minimally gadgeted cinematography. An aid in teaching film-making. Student supplies his own regular or super-8 mm cine camera and all materials.

EN 78 Writing for the Specialist 3-3
This course is individualized to teach forms of writing appropriate to specific disciplines, i.e., nursing, social sciences, natural sciences.

EN 79 Creative Dramatics 3-3
Students will learn to express themselves orally and physically through mime, improvisation, dance, drama and role-playing, and to use this knowledge in dealing with children and adults.

EN 80 Children's Literature 3-3
Focusing on a wide range of subjects with criteria for evaluation of books, for related library sources, for book fairs, and for school and classroom library needs.

EN 81 Literature for Young Adults 3-3
Focusing on the needs of the adolescent in junior and senior high school levels, the emphasis is on related reading materials, on music, on the cinema, and on other current fads which influence the teenager on the way to maturity.

EN 82 Rhetoric and the Teaching of Writing 3-3
A study of the problems of teaching of writing at the secondary level. The uses of rhetoric.

EN 83 The Structure and the Nature of Language
The study of language systems and grammatical theories; history of the English language; theories of acquisition; psycholinguistic and sociolinguistic topics.

EN 88 The Teaching of English 3-3
The methodology of English (lesson planning, selection of materials, curriculum development, review of relevant research). Offered in fall semester only. Prerequisite: IM 24.

EN 89 Internship 12 sh
Students will be placed in local agencies or businesses involving journalistic or broadcast skills. Students registering for EN 89 should also register for EN 93.

EN 90 Independent Study 3-3
For English majors excelling in scholarship, upon approval of both department head and advising instructor.

EN 92 Seminar 3-3
Literary analysis and research, topic to be selected by instructor. Primarily for English majors, others admitted with permission.

EN 93 Intern Seminar 3-3
This seminar guides the student in research related to his internship.

ENVIRONMENTAL SCIENCE

ES 10 Seminar in Environmental Science 1-1
Offered: Fall and Spring semesters
Survey of the practical scope of environmental science with special reference to the variety of activities performed by environmental scientists and the academic preparation and performance expected by potential employees. Relevance of various disciplines to career preparation. Lectures, films, visits to private and governmental agencies, seminars and symposia by students, faculty and visiting representatives of government and industry.
1 hr. per week plus occasional additional hours

ES 70 Field Techniques in Environmental Science 6 sh
Offered: Summer, 5 weeks full time
Prerequisites: Junior or senior standing and permission of the Environmental Science Committee
Practical experience in the use of instrumentation and techniques for the acquisition and analysis of data and the presentation of results from a variety of environmental studies. Field work includes planning and execution of practical environmental investigations and the preparation of a finished technical report.

ES 80 Internship in Environmental Science 3-6 sh
Offered: Fall and Spring semesters
Prerequisites: Junior or senior standing and permission of the Environmental Science Committee
Work experience in private or governmental concerns. Assignments depend on needs of participating organization and the interests and abilities of the student.

GEOGRAPHY

GE 10 Introduction to Geography 3-3
The interrelationships between the physical and cultural elements of man's environment.

GE 11 Principles of Human Geography 3-3
An introduction to the elements and processes underlying economic, social, and political geographic patterns, with applications to actual case studies and situations.

GE 13 Earth, Sea and Air 3-4
Selected topics from the earth sciences. (This course is identical with SC 13 and may be counted as a laboratory science course.)

GE 21 Geology 3-4
An introductory survey of the basic elements of physical and historical geology. Laboratory required. Open to all students.

Physical, Earth, and Environmental Courses

GE 40 Elements of Weather 3-3
Fundamental principles of weather systems. Emphasis will be on mid-latitude and tropical cyclones, convective phenomena and weather modification.

GE 41 Climatology 3-3
Regional differentiation of the climatic zones of the major land and ocean areas of the world. Special attention will be given to urban climatology and the energy and moisture climatology of the earth. Prerequisite: GE Elements of Weather or permission of the instructor.

GE 42 Geomorphology 3-3
A comprehensive study of land forms and their origins. Prerequisite: GE 21 Geology or permission of the instructor.

GE 43 Oceanography 3-3
A study of the physical and chemical properties of sea water, atmospheric interaction with the sea surface, currents and volume flow, the energy budget of the oceans, and the submarine geology of the ocean basins including a thorough discussion of ocean floor spreading. Prerequisites: 6 hrs. in geography, earth science, or the natural sciences.

GE 44 Urban Geography 3-3
Analysis of the external relationships and internal structure of cities, with emphasis on the spatial attributes of contemporary urban qualities and problems in America. Classroom activities are supplemented by applied studies in the greater Fitchburg-Leominster area. Prerequisite: 3 hrs. of geography or permission of the instructor.

GE 45 Map and Aerial Photograph Interpretation 3-3
Techniques in the use of maps and aerial photos as applied to environmental perception and spatial analysis.

GE 30 Economic Geography 3-3
An analysis of basic geographic factors involved in the economic activities of man. Prerequisite: GE 10.

GE 31 Political Geography 3-3
Dependent and independent political units, boundary disputes, strategic areas, buffer zones, and the function of international organizations.

GE 34 Systematic Concepts of Developing Nations 3-3
Investigation and analysis of the increasing relevance of the world's area commonly referred to as "developing." A systematic approach is used in order to attain an understanding of the physical and anthropogeographical makeup of the area under investigation. Prerequisite: GE 30 Economic Geography.

GE 47 Geographic Perspectives on Conservation 3-3
An analysis of natural resources problems arising from changes in technology, population pressure, and concern with the quality of environment. Prerequisite: GE 10.

GE 48 Cartography 3-3
Techniques of presenting data via mapping and field survey. Prerequisite: 6 hrs. of geography or permission of the instructor.

GE 88 Special Methods in Teaching Geography 3-3
Lesson planning, selection of materials, curriculum development, review of relevant research. Prerequisite: IM 24 and ED 61.

GE 90 Independent Study in Geography
Provides exceptional students the opportunity of research with faculty guidance in a subject or problems of geographic significance. Prerequisite: 12 hrs. of geography and permission of instructor. Hours and credit by arrangement.

U.S. and Foreign Area Studies

Regional and systematic analysis based upon geographic elements influencing domestic evolution and international relations. Prerequisite: GE 10.

GE 32 U.S. and Canada 3-3

GE 33 Latin America 3-3

GE 35 Europe 3-3

GE 36 Asia 3-3

GE 38 Africa 3-3

GE 39 Oceania 3-3

HISTORY

Introductory Courses

Courses numbered 10-29 are primarily for freshmen and sophomores. History 10 and 12 (Modern European History I and II) are prerequisites for all elective courses in European History. History 21 and 22 (United States History I and II) are prerequisites for all courses in United States History. History 20 may be substituted for History 12 as a prerequisite to further courses in European History.

All history courses except HI 88 and HI 90 may be used to fulfill either the humanities or social science requirements under General Education.

HI 10 Modern European History I 3-3
The evolution of modern European ideas and institutions from the Renaissance to the Napoleonic era. Political events, selected biographies, topics in cultural history, and economic and social changes.

HI 12 Modern European History II 3-3
Political developments, ideologies such as socialism and nationalism, the impact of science and technology, and the changing relationship of Europe to Africa and Asia. Not open to those who have credit for HI 20.

HI 13 Medieval Europe 3-3
Major characteristics and institutions of medieval civilization. Within a chronological framework of political events, attention is given to topics in art, literature, philosophy, and religion.

HI 14, 15 British History 3-3 each semester
The first semester covers the development of English government and culture from the earliest times to the reign of Queen Elizabeth I. The second semester covers from 1603 to the present with emphasis on parliamentary government, the industrial and agricultural revolutions, the evolution of the British Empire and Commonwealth, and the position of Britain today.

HI 16, 17 An Introduction to the Far East 3-3 each semester
East Asian civilization as seen through the political systems, art, thought, and literature. The second semester will emphasize the balance of modernization and traditional values in China and Japan.

HI 18 History of Mexico, Central America and the Caribbean 3-3
Both HI 18 and 19 survey pre-Columbian and colonial backgrounds, the clash and fusion of cultures, and the evolution of today's Latin American civilizations as they relate to specific geographical areas.

HI 19 History of South America 3-3
See HI 18.

HI 20 Introduction to Family History 3-3
An introduction to the study of change in the structure and function of the family, especially under the impact of industrialization and urbanization. Emphasis in readings upon the psychological, sociological, and historical evolution of the family as an institution. Interested students may write their own family histories in conjunction with the Anonymous Families History Project of the American Historical Association.

HI 21, 22 United States History I and II 3-3 each semester
A survey of United States History beginning with colonial times and continuing through the era of Reconstruction following the Civil War the first semester. The second semester covers from Reconstruction to the present.

HI 23 American Women, 1870-1970 3-3
Women in modern America, the struggle against discrimination and for the ballot, the history of various women's groups, including working class, black, and immigrant women. Not merely the study of exceptional women but women as housewives, breadwinners, and citizens.

HI 24 America Goes to War 3-3
A review of America's participation in wars from 1898 to the present, public reaction to war, the impact of wars on American society and institutions, and how the military-industrial complex developed after 1945.

Electives

All history electives except History 88 and History 90 may be used to fulfill either the humanities or social science requirements under General Education.

HI 30 American Colonial History 3-3
Exploration, settlement patterns, imperial system, social structure, rise of representative government in America, and the 18th-century wars for empires.

HI 31 U.S. Westward Movement 3-3
The movement as a social process and the impact of the West on American development.

HI 32 The American Civil War and Reconstruction 1850-1865 3-3
Politics, slavery, and Lincoln's rise to power; political military and diplomatic aspects of the war; failure of reconstruction.

HI 33 The United States in the Twentieth Century 3-3
Events, personalities, and problems of the period from 1900 to the coming of the New Deal.

HI 34 The United States in the Twentieth Century II 3-3
A continuation of HI 33 from the New Deal to the present.

HI 36 United States and Industrial History I 3-3
The industrialization and urbanization of the United States from colonial times to 1870.

HI 37 United States Industrial History II 3-3
A continuation of HI 36 from 1870 to the present.

HI 38 History of the South 3-3
Slavery, the Confederacy, Reconstruction. Development of the Solid South, the Negro, and Civil Rights from a Southern view.

HI 39 Federalist Era 1789-1828 3-3
Early American nationalism with stress on the first American party system; economic nationalism, and foreign policy declarations. Prerequisite: HI 21.

HI 40 Modern German History 3-3
Germany since ca. 1500 with emphasis on the last two centuries and Germany's role in international politics.

HI 41 The Frontier in American History 3-3
The Frontier studied as a historical, social, economic, and psychological process to determine its impact on American development.

HI 42 The Economic History of the United States 3-3
Agricultural, financial, commercial, and technological development of the United States from colonial times to the present.

HI 43 U.S. Foreign Relations: The First Hundred Years 3-3
Diplomacy of the Revolution, foreign relations of the new nation, the Monroe Doctrine and problems of boundaries and expansion, the Civil War and after to about 1890.

HI 44 The U.S. in World Affairs: 1898 to the Present 3-3
The age of imperialism, World War I, the era of "isolation," origins of World War II, American involvement and wartime diplomacy, breakdown of East-West relations, the Cold War, the Korean and Viet Nam conflicts.

HI 45 American Social and Intellectual History I 3-3
The history of ideas in America from the 17th century.

HI 46 American Social and Intellectual History II 3-3
A continuation of HI 45.

HI 48 Black America 3-3
An investigation of the cultural heritage and historical development of the black man in the United States from his West African origins to the present. Emphasis on understanding of prejudice and race relations.

HI 49 The Republican Era, 1877-1912 3-3
Major movements of the late nineteenth and early twentieth centuries in United States History including Grangerism, Populism, urbanization, trade unionism, socialism, and progressivism.

HI 50 The American Revolution 3-3
The coming of the Revolution, war tactics and strategy, problems of the Confederation period, and the American Constitution.

HI 53 Nineteenth-Century Europe 3-3
Political, social, and cultural trends from the outbreak of the French Revolution to the beginning of World War I.

HI 54 Twentieth-Century Europe 3-3
From the first World War to the present. Cultural, scientific, and social developments as well as domestic and international politics.

HI 55 Tudor and Stuart England 1485-1689 3-3
Henry VII to the Glorious Revolution. The Reformation, the religious settlement under Elizabeth I, Puritanism, overseas exploration, evolution of government.

HI 56 Imperial Russia 3-3
Founding of the Kievan State; the Mongol, Muscovite, and Imperial Periods to the Revolution of 1905.

HI 57 The Soviet Union 3-3
The Bolschevik seizure of power; attempts to implement Marxist theory; institutional development of the state, family education, and religion.

HI 58 Oral History 3-3
An introduction to the collection of oral historical experience. Students work on tape-recording such experiences as the depression, immigration, etc. Each student learns the use of the tape recorder, interviewing, and the techniques of indexing and cataloging.

HI 60 Imperialism and World Politics 3-3
Relations between Europe and Asia, Africa and Latin America during the periods of expansion, Western dominance, and nationalist uprisings against colonialism.

HI 61 Irish History, 1798-1850 3-3
The Rebellion of 1798 and the Act of Union; O'Connell and Catholic emancipation; the rise of Irish nationalism; the great famine of 1845-50.

HI 62 Irish History, 1850 to the present 3-3
The Home Rule movement; Parnell and the land league; the Celtic revival; the rebellion of 1916 and the civil war; the Republic of Ireland and Ulster in the twentieth century.

HI 63 History and Culture of Puerto Rico 3-3
Political social, economic, and cultural development of Puerto Rico from its beginnings to the present. The blending of Indian, African, Spanish, and Anglo-American traditions into a uniquely Puerto Rican culture.

HI 64 Africa 3-3
Sub-Saharan Africa from the earliest man to the 1960's. The development of trading empires and African cultures. The impact of Europe's "scramble for Africa." The struggle for independence and the launching of new nations.

HI 80 The Historical Method 3-3
An introduction to the historical method with stress on bibliographical aids, historical fallacies, and the theories of history as they have developed. Primarily for history majors.

HI 88 Special Methods in Teaching of History 3-3
Special techniques for the teaching of history, and their relationship to the principles of general methods. Prerequisite: IM 24.

HI 90 Independent Study in History
Open to students majoring or specializing in history with the permission of the supervising instructor and the department. Meetings times and credit by arrangement.

HUMANITIES

FOREIGN LANGUAGES
(Humanities Department)

Students with previous language experience will not be admitted to the elementary language courses unless written permission is given by the instructor. Specific course prerequisites are listed under each language.

French

FR 10 French for Beginners I 3-4
Correct pronunciation, reading ability and fundamentals of grammar and syntax. French gradually becomes the working classroom and laboratory language. For students with no language experience or less than two years high school level. Students with two or more years not admitted without permission of Instructor.

FR 11 French for Beginners II 3-4
A continuation of FR 10.

FR 20 Intermediate French I 3-4
Conversation and laboratory practice; readings stressing life, customs and culture of France. Prerequisite: Two years of high school French or French 11 and/or instructor's permission.

FR 21 Intermediate French II **3-4**
A continuation of FR 20.

FR 30 French Civilization I **3-3**
Development of the French nation as revealed in its history, geography and basic institutions through modern literature. Prerequisite: FR 21 or equivalent and/or Instructor's permission. (Course conducted in French.)

FR 31 French Civilization II **3-3**
A continuation of FR 30.

FR 33 French Literature I **3-3**
A survey of the main currents of French literature from the Middle Ages through the 18th century. Prerequisite: FR 21 or Instructor's permission.

FR 88 Methods for Teaching French in the Elementary School **3-3**
Techniques and materials for use in elementary school. Required for foreign language specialization. Minimum of 12 semester hours of French or its equivalent and Instructor's permission is required.

FR 90 Advanced French Independent Study **3-3**
Prerequisite: Minimum of 12 semester hours, 2 grade-average in French, and permission of Instructor, Department Chairman and Academic Dean.

German

GR 10 German for Beginners I **3-4**
Correct pronunciation, reading ability, and fundamentals of grammar and syntax. German gradually becomes the working classroom and laboratory language.

GR 11 German for Beginners II **3-4**
A continuation of German 10.

GR 20 Intermediate German I **3-4**
Conversation and laboratory practice; readings stress the life, customs, and culture of Germany. Prerequisite: Two years of high school German or GR 10 and GR 11.

GR 21 Intermediate German II **3-4**
Continuation of GR 20.

GR 30 German Civilization I **3-3**
History, geography, literature, fine arts from Holy Roman Empire through today. Given in German. Prerequisite: GR 21 and/or permission of Instructor.

GR 31 German Civilization II **3-3**
Continuation of GR 30.

GR 33 German Literature through Goethe **3-3**
Representative works of literature up to and including Goethe. Conducted in German. Prerequisite: Completion of GR 21 and/or Instructor's permission.

GR 34 German Literature since Goethe **3-3**
Continuation of GR 33.

GR 35 German Conversation and Composition **3-3**
Prerequisites: Minimum of 12 semester hours, 2 grade-average in German and permission of Instructor or Department Chairman.

Russian

RU 10 Russian for Beginners I **3-4**
Correct pronunciation, reading ability, and fundamentals of grammar and syntax. Russian gradually becomes the working classroom and laboratory language.

RU 11 Russian for Beginners II **3-4**
Continuation of RU 10.

RU 20 Intermediate Russian I 3-4
Remedial pronunciation, grammar variety, conversation, and laboratory practice. Readings stress U.S.S.R. life, customs, and culture. Russian is the working language. Prerequisite: Two years of high school Russian or RU 11 and/or Instructor's permission.

RU 21 Intermediate Russian II 3-4
Continuation of RU 20.

Spanish

SP 10 Spanish for Beginners I 3-4
Correct pronunciation, reading ability, and fundamentals of grammar and syntax. Spanish gradually becomes the working classroom and laboratory language.

SP 11 Spanish for Beginners II 3-4
Continuation of SP 10.

SP 20 Intermediate Spanish I 3-4
An intensive review of grammar, practice in writing and speaking; readings stress life, customs, and culture of Spain and Spanish America. Prerequisite: SP 10-11 or equivalent.

SP 21 Intermediate Spanish II 3-4
Continuation of SP 20.

SP 30 Spanish Civilization I 3-3
Spanish culture as evidenced in Spain and Spanish America through modern representative literature; conducted in Spanish. Prerequisite: SP 21 and/or instructor's permission.

SP 31 Spanish Civilization II 3-3
Continuation of SP 30.

SP 33 Spanish Literature I 3-3
A survey of Spanish and Spanish American literature; conducted in Spanish. Prerequisite: SP 21 and/or instructor's permission.

SP 34 Spanish Literature II 3-3
Continuation of SP 33.

SP 35 Spanish Conversation and Composition 3-3
For students desiring greater fluency in speech and writing. Recommended for civilization and literature courses and foreign language specialization. Prerequisite: SP 21 or instructor's permission.

SP 40 Practical Spanish for the Human Services Professional 3-3
Spanish for workers in public service, human services, nursing, medical technology, special education, with special emphasis upon the cultural and psychological characteristics of Spanish speaking peoples.

SP 88 Methods for Teaching Spanish in the Elementary School 3-3
Techniques and materials for use in elementary school. Prerequisite: Minimum of 12 semester hours beyond beginners' level and permission of instructor.

PHILOSOPHY

PL 10 Introduction to Philosophy 3-3
An introduction to the problems, methods, and goals of classical and contemporary Western Philosophy. Emphasis is placed upon how these differ from and relate to other fields of human knowledge.

PL 20 Ancient Philosophy 3-3
A study of the beginnings of Western Philosophy, including the Pre-Socratics, Plato, Aristotle, and several other figures of the period. Prerequisite: PL 10.

PL 21 Medieval Philosophy 3-3
Includes St. Augustine, Boethius, Albertus Magnus, Avicenna, Averroes, Maimonides, and St. Thomas, and their influence upon subsequent philosophy. Prerequisite: PL 10.

PL 22 Modern Philosophy 3-3
Trends of modern thought since the Renaissance, including Descartes, Locke, Spinoza, Leibniz, Hume, Kant, and Hegel. Prerequisite: PL 10.

PL 23 Contemporary Philosophy 3-3
An examination of some current trends and issues in contemporary American, British, and European philosophy. Prerequisite: PL 10.

PL 30 Philosophy of Education 3-3
This course seeks to trace the origin and development of major educational theories and their contemporary implications.

PL 31 Logic: Traditional and Contemporary 3-3
Logic and language; informal fallacies; Aristotelian and symbolic deduction; induction and scientific method; the nature of reduction.

PL 32 Theories of Knowledge 3-3
The problems and methods of human knowledge. Theories presented in the light of Idealism, Realism, Pragmatism, and Existentialism. Prerequisite: PL 10.

PL 33 Metaphysics 3-3
Introduction to the origin and development of metaphysical problems in Western Philosophy. Prerequisite: PL 10.

PL 34 Philosophy of Man 3-3
The individual, social, and cosmic dimensions of man as seen from the perspectives of both philosophy and behavioral science.

PL 35 Contemporary Ethical Theories 3-3
Analysis of moral experience; survey, evaluation, and synthesis of major ethical theories: ethics and behavioral science.

PL 36 Problems of Moral Decision 3-3
Application of ethical theory to some of the major problems of contemporary man and society.

PL 40 Existentialism 3-3
Origin of contemporary Existentialism; its leading ideas as seen in writings of such philosophers as Kierkegaard, Jaspers, Marcel, Sartre, and Camus. Prerequisite: PL 10.

PL 41 Philosophy of Art 3-3
An examination of the interpretations of esthetic experience presented by such thinkers as Aristotle, Tolstoy, Shiller, Bergson, Spengler, and Dewey. Prerequisite: PL 10.

PL 42 Political and Social Philosophy 3-3
The various political and social ideas beginning with Plato and continuing to Marx. Prerequisite: PL 10.

PL 43 Philosophy of Science 3-3
An analysis of the methods and goals of the physical sciences, how they differ from the social sciences, and the philosophic problems encountered in scientific pursuits.

PL 44 Philosophy of Language 3-3
The role played by language in human knowledge and the increased emphasis on the analysis of language in recent philosophy. Prerequisite: PL 10.

PL 45 Philosophy of Love 3-3
An analysis of the concept "love" as employed in the social and moral philosophies of various classical and contemporary thinkers. Prerequisite: PL 10.

PL 46 Philosophy of Religion 3-3
The God-problem and religious experience as seen in the classical philosophers and in the philosophies of Existentialism and Pragmatism. Prerequisite: PL 10.

PL 47 Philosophy of Thanatology 3-3
An examination of the nature of death and its relation to the concepts of self, morality, soul, etc. in Western thought. Prerequisite: PL 10.

PL 50 Plato 3-3
Plato's theory of ideas, theory of knowledge, ethical and political views, doctrine of the fine arts. Prerequisite: PL 10.

PL 51 Aristotle 3-3
A study of Aristotle's philosophy as seen in his Metaphysics, Politics, and Nicomachean Ethics. Prerequisite: PL 10.

PL 52 Philosophy in an Age of Technology 3-3
This course explores a broad range of issues including: the nature of technology and its impact on society; the social and moral responsibilities of scientists and technologists; and the problems encountered in policy-designing for mankind. Prerequisite: PL 10.

PL 53 Myth and Symbolism in Human Thought 3-3
An introduction to the historical, logical, and esthetic roles played by myth and symbol in ancient, modern, and contemporary thought. Prerequisite: PL 10.

PL 54 Marxism 3-3
A study of Marx's thought; its origins, development, and contemporary applications. Prerequisite: PL 10.

PL 55 Early American Philosophy 3-3
A study of American thought from the Colonial Period through the 19th century.

PL 56 Contemporary American Philosophy 3-3
An examination of the current trends and issues in American thought.

PL 57 American Pragmatism 3-3
An analysis of the thought of Peirce, James, and Dewey. Prerequisite: PL 10.

PL 58 Philosophic Themes in Literature 3-3
A study of the philosophic positions, both implicit and explicit, found in selected works of classical and contemporary literature. Prerequisite: PL 10.

PL 59 Personalism and Contemporary Culture 3-3
Personalism in its European and American manifestations; its relation to other contemporary currents of philosophy; the prospect for social, political, and ethical applications.

PL 60 Seminar/Special Topics

INDUSTRIAL ARTS

IA 10 General Shop I 2-4
Methods and procedures of conducting teaching units in a multiple activity shop. Students plan and participate in units which are typical of those normally carried on in teacher-training assignments.

IA 11 Introduction to Wood 2-4
The making of household accessories. A study of tools, materials, processes, mechanics and design.

IA 12 Introduction to Metals 2-4
Chemical metallurgy of selected metals, the use of precision measuring tools, sheetmetal fabrication, foundry practices, bench processes.

IA 13 Introduction to Typography 2-4
Comparison of printing methods in visual communication. Latin alphabet, typography, design-layout, terminology, point system, inks, plates, presses, papermaking, proofmarks.

IA 14 DC Circuit Fundamentals 2-4
Principles of DC electricity experimentally applied to circuits, devices and wiring problems.

IA 15 Introduction to Power Mechanics 2-4
The study of man's endeavors to harness the forces of nature to meet his demand for power. Students perform experiments and submit reports on their data. The single cylinder engine is also studied in this course.

IA 16 Introduction to Drawing 2-4
Lettering, dimensioning, orthographic projection, symbols, sectioning, isometric and auxiliary views. Problem development and blueprint reading.

IA 17 Introduction to Design 2-4
Through a series of compositional assignments students are introduced to two-dimensional and finally three-dimensional form.

IA 18 Industrial Arts for Special Education 2-4
Rudiments of planning, drawing, and construction for teaching aids and projects. Knowledge of tools, materials and processes.

IA 19 Instructional Material in Elementary Education 2-4
A practical and active approach to reinforcing other curriculum areas through planned experiences with tools, materials, and processes of industry carried on with elementary students at McKay School.

IA 20 General Shop II
Individual pieces of small furniture are designed, constructed and finished. Advanced concepts and techniques are taught.

IA 22 Machine Shop Processes 3-6
Metalworking machine tools and processes, as well as arc welding. Design and fabrication of products which involve skill in machining and welding.

IA 23 Graphic Arts Unit Teaching 3-6
Investigation of a significant graphic arts product. Problem-centered group activity leading to unit booklet involving photography, visual aids, bookbinding, printmaking.

IA 24 AC Circuit Fundamentals 3-6
Principles of AC electricity and electromagnetism and their applications in circuitry, motors, transformers and other devices.

IA 25 Internal Combustion Engines 3-6
The study of a common automotive multi-cylinder type engine and the component parts of the drive train to complete the system. Activities include testing, disassembling for study; reassembling and retesting of engines and parts. Prerequisite: IA 15.

IA 26 Engineering Drawing 3-6
Continuation of fundamentals in the field of intersection and developments, revolutions, axonometrics, assembly, and detail drawing.

IA 30 Structures 3-6
Basic principles and assumptions of structural design, including drawing and models. Load tests determining reactions, shears, bending moments, stresses.

IA 31 Production Furniture 3-6
Production of a piece of furniture employing jigs, fixtures and suitable mass-production procedures. Appropriate methods of production management.

IA 32 Advanced Machine Shop Processes 3-6
An opportunity to broaden the knowledge and skills needed to successfully plan and fabricate acceptable products utilizing available machines, tools and materials. Oxy-acetylene welding, cutting and brazing will be included in the instructional program. Prerequisite: IA 12 and 22 or equivalent.

IA 33 Offset-Lithography 3-6
Problems of design, pasteups, repros, camera, stripping, platemaking, press operation. History, color, halftones, stock selection, chemistry of ink on paper.

IA 34 Radio Theory and Practice 3-6
Basic electronic principles and their applications in radio circuitry. Construction and testing problems.

IA 35 Flight 3-6
The history and scientific principles of sub-sonic, super-sonic, rocket propulsion and jet engines. Students build models for drag and related phenomena in aeronautics.

IA 36 Descriptive Geometry 3-6
Abstract and practical problems are worked out graphically. The concept of locus.

IA 37 Advanced Design 3-6
Students develop individual design projects and follow through to a completed design module. Prerequisite: IA 17 or equivalent course.

IA 40 Research in Industrial Materials 3-6
A study of selected materials or products and tests applied to determine their properties. Statistical procedures applicable to analyzing acquired data and proper techniques for reporting results of research are included. Opportunity provided for individual interests.

IA 41 Woodworking Technology 3-6
Tool and machine shop maintenance, designing and making teaching aids, and experimentation in wood technology and project development. For skilled woodworkers.

IA 42 Elements of Metallurgy 3-6
A course based upon the science of metals, their properties and how they can be modified to improve usefulness. Alloying, crystallization, allotropic changes, corrosion, hardness testing of common metals subjected to heat treatment are included. Transformation and equilibrium diagrams will be studied.

IA 43 Problems of Service Printing 3-6
Supporting role of graphic arts. Job scheduling, planning, ordering stock, estimating. Heidelberg and Davidson operation. Textbooks, curriculum problems, shop layout.

IA 44 Transistors, FM, Test Equipment 3-6
FM receivers, transistor circuitry, power supplies, test equipment and various electronic devices. Constructional and experimental experiences.

IA 45 Advanced Power 3-6
To research, design and construct a working prototype model in the field of energy control that has been approved by the professor before the semester begins. Prerequisites: IA 15 and IA 25 or approval of instructor.

IA 46 Graphics 3-6
Graphics as an instrument of analysis and conceptualization provides the graphical representation of data, graphical mathematics, arithmetic, algebra, calculus, empirical equations, functional scales and nomography. Prerequisite: IA 16 and IA 26.

IA 47 Ceramics 3-6
Includes throwing on the wheel. Glazing techniques. A strong emphasis on three-dimensional sculptural form.

IA 50 Industrial Processes 3-6
A study of selected processes utilized by industry in the processing, fabrication or modification of materials and their properties to provide useful components or finished products required by our modern society, with opportunity for in-depth investigation of one or more of these processes.

IA 54 Introduction to Digital Processors 3-6
Fundamentals of digital processing and digital systems. Emphasis will be on "hardware" so that students will be able to construct simple special purpose digital processors. Prerequisite: IA 34 or permission of instructor.

IA 60 Problems in Mechanical Maintenance 3-6
A course designed to investigate problems, and possible solutions, encountered in the maintenance of mechanical equipment, with opportunity to engage in meaningful experiences involving machinery or components. Examples of topical coverage may include lubrication, adjusting bearing installation, replacement of parts, color and dynamics, among others.

IA 70 Foundations of Industrial Arts I 2-2
Educational theories, social and academic setting, and leaders of each period of Industrial Arts history from manual training to the present.

IA 71 Foundations of Industrial Arts II 3-4
Curriculum theories and their application to the structure and organization of Industrial Arts in general education.

IA 80 Principles and Practices in Industrial Arts 3-3
Principles underlying methods of planning and guiding learning activities in Industrial Arts teaching.

IA 85 Student Teaching in Industrial Arts 10-20
Each student is responsible for teaching classes either in the campus junior high school or public school shops under supervision.

IA 87 Seminar in Industrial Arts 2-2
Principles and practices of shop administration, including shop planning finances, equipment, storage, maintenance, law.

IA 90-97 Independent Study in Various Shops 1-3 hours credit
Open to juniors and seniors with approval of instructor and departmental chairman.

INSTRUCTIONAL MEDIA

IM 20 Theory and Practice of Media 3-3
The purpose of this course is to provide students with a fundamental knowledge of the theoretical aspects of visual and aural media. Designed to meet the needs of future professionals to whom visual and aural forms of communication are essential. Activities center around experiences which relate theory to practice.

IM 22 Communication Design Project 3-3
This course will involve students in the design, production, and evaluation of on-going media-communication projects. Students will have an opportunity to learn some basic equipment and operation skills, but the course will place greater emphasis on design than on production.

IM 25 Media and Aesthetics 3-3
The course is designed for those students desiring to investigate and experiment with the aesthetic aspects of visual and aural media. Students will be involved in a number of experiences ranging from viewing prepared visual programs to producing aesthetic visual presentations. A previous media course is strongly suggested.

IM 24 Design, Preparation, and Production of Instructional Materials 3-3
This course is designed to provide students with practical experience in visual communication. Participants become involved in a variety of media activities including the design, preparation, production and evaluation of graphic, photographic and other types of visual and aural materials.

IM 30 Introduction to Instructional Television 3-3
A multi-mode course progressing from simple, single camera television production to three-camera basic studio production, and implementing instructional objectives in the design of the student made programs.

IM 31 Television: Its Place in Education 3-3
An examination of the role of television in education. Includes: the criticism of programming for maximum learning benefits; a survey of new developments in programming and delivery systems; practice in software utilization techniques; study of the future of the medium in education.

IM 40 Basic Photography 3-3
Basic camera and darkroom techniques. Basic composition and visual studies. Students will provide all paper and film for the course.

IM 41 Intermediate Photography 3-3
Advanced camera and darkroom techniques. History and development of Photography. Visual composition. A student portfolio will be prepared and submitted by the end of the course. Students provide all materials, except chemicals for the course. Admission to the course by permission of the instructor only.

MATHEMATICS

MA 10 Introduction to Mathematics 3-3
An elementary course intended to acquaint the student with the nature of mathematical activity such as inductive and deductive reasoning, problem solving, etc.

MA 11 Elementary Statistics 3-3
Elementary statistical and probabilistic concepts and techniques are studied to provide insight into types of statistical thinking which pervade contemporary life. This course is intended for students majoring in fields other than mathematics or science.

MA 12 Functions 3-3
Intended as a preparation for the study of calculus. Topics include the real numbers, equations and inequalities, analytic geometry, and polynomial, trigonometric, exponential and logarithmic functions.

MA 13 Finite Mathematics 3-3
Selected topics from vector algebra, matrix theory, combinatorics, game theory, linear programming, graph theory, set theory, and Boolean Algebra.

MA 17 Applied Statistics 3-3
Topics include an introduction to probability, techniques of sampling, estimation and tests of hypotheses. Applications to industry, business, science and education are emphasized.

MA 20 Informal Geometry 3-3
An intuitive and non-axiomatic study of basic geometric objects and concepts. Topics studied vary but are chosen for their intuitive appeal as well as their geometric significance.

MA 21 Analytic Geometry 3-3
A study of geometry of the plane and three dimensional space emphasizing the interaction of algebraic and geometric concepts.

MA 23 Calculus I 3-3
The derivative of a function, methods of differentiation and applications.

MA 24 Calculus II 3-3
The Riemann Integral, methods of integration, and applications.

MA 25 Abstract Algebra I 3-3
A study of algebraic structures including groups, rings, and fields.

MA 26 Linear Algebra 3-3
Topics include the algebras of vector spaces, linear transformations and matrices with applications.

MA 29 Computer Applications for Calculus 3-3
A computational approach to the fundamental concepts studied in calculus. Topics may include functions, limits, derivatives, finding roots, integrals, differential equations, sequences, and series. Prerequisite: programming experience.

MA 30 Geometry I 3-3
A formal study of basic concepts in geometry and the foundations of Euclidean geometry.

MA 31 Elementary Number Theory 3-3
Properties of the integers are studied. Topics include divisibility, prime numbers, congruences, Diophantine equations and mathematical induction.

MA 32 History of Mathematics 3-3
The development of mathematical ideas and methods from ancient to modern times and their relevance for other fields of knowledge.

MA 33, 34 Calculus III and IV 3-3 each semester
Sequences and series, vector valued functions, partial differentiation, multiple integration and other topics.

MA 36 Introduction to Mathematical Logic 3-3
An elementary introduction to the standard sentential and first order predicate calculi is given. Connections between syntactic and semantic aspects of formal languages are emphasized.

MA 37 Probability and Statistics I 3-3
A careful development of elementary probability theory with applications is followed by the study of discrete and continuous random variables including the binomial, Poisson, and normal.

MA 40 Geometry II 3-3
Projective geometry and other topics.

MA 41 Topology 3-3
Topics include point sets, metric spaces, topological spaces, connectedness and compactness.

MA 42 Elementary Differential Equations 3-3
Linear first and second order differential equations, methods of solution and applications are studied. Series solutions and higher order linear equations are considered.

MA 43 Advanced Multivariate Calculus 3-3
The differential and integral calculus of vector-valued functions and functions of several variables.

MA 44 Real Variable Theory 3-3
A rigorous treatment of the foundations of differential and integral calculus with such topics as the real numbers, continuity, metric, and Euclidean spaces.

MA 45 Abstract Algebra II 3-3
A continuation of MA 25.

MA 47 Probability and Statistics II 3-3
Random variables and their probability distributions are used to study problems in estimation, hypothesis testing, regression and analysis of variance.

MA 81 Methods and Materials in Secondary Mathematics 3-3
Curriculum and pedagogy of secondary school mathematics with a practicum of preprofessional experiences. Prerequisite: IM 24

MA 83 Mathematical Concepts 3-3
Topics from arithmetic, algebra and geometry of modern elementary school mathematics programs with attention to the structural and discovery approach.

MA 90 Independent Study 3 sh
Prerequisite: Permission of department.

MEDICAL TECHNOLOGY

MT 10 Introduction to Medical Technology 1-2
An integrated lecture-laboratory course designed to acquaint the student with the role of the medical technologist in the clinical laboratory, the duties of technologists, employment opportunities and educational requirements for the profession. Laboratory work includes introduction to techniques in hematology, clinical chemistry, immunohematology and clinical microbiology. 2 hrs lecture/lab per week. Offered Fall semester.

MT 40 Clinical Hematology 8 sh
Comprehensive study of principles, procedures, special techniques and disease states in hematology. Laboratory experience includes theory and practice of blood cell enumeration and identification of normal and abnormal stained blood smears. ca. 10 hrs lecture/lab per week during each semester of hospital internship year. Prerequisites: 90 college credits, including 21 cr. Biology and 20 cr. Chemistry.

MT 42 Clinical Chemistry 8 sh
Principles and techniques currently employed in clinical laboratories; preparation of solutions and care of equipment. Diagnostic tests are performed on all body fluids utilizing both manual and the latest instrumental techniques. Theory of the chemical manifestations of disease and the interpretation of data are stressed. ca. 10 hrs lecture/lab per week during each semester of hospital internship year. Prerequisites: 90 college credits, including 21 cr. Biology and 20 cr. Chemistry.

MT 44 Clinical Microbiology 8 sh
A course designed to prepare the student for the isolation, identification and propagation of pathogenic organisms. Bacteria and their clinical significance to man are emphasized, but pathogenic fungi, protozoa and viruses are also considered. ca. 10 hrs lecture/lab per week during each semester of hospital internship year. Prerequisites: 90 college credits, including 21 cr. Biology and 20 cr. Chemistry.

MT 46 Immunohematology 8 sh
Basic theory and laboratory techniques in blood banking and serology: common blood types, screening and preparation of donors, cross-matching, antigen-antibody reactions, and serological procedures. ca. 10 hrs lecture/lab per week during each semester of hospital internship year. Prerequisites: 90 college credits, including 21 cr. Biology and 20 cr. Chemistry.

MUSIC

MU 10 Art of Music I 3-3
Music as aesthetic experience. Representative styles and categories from the Middle Ages to the present.

MU 20 Art of Music II 3-3
Music's selection of the values and ideals of societies past and present. Interrelationships between the fine arts.

MU 22 Applied Music 1-2
Techniques and skills for prospective teachers of elementary and special classes. Students who can pass an equivalency examination are exempted.

MU 31 Symphony 3-3
Structural and stylistic characteristics of the symphony from the 18th century to the present.

MU 32 Opera 3-3
Several works from the standard operatic repertoire. Some significant trends in modern opera.

MU 34 Twentieth-Century Music 3-3
The idioms and aesthetic notions of the present century, together with their relationship to the past.

MU 35 American Music 3-3
American music from colonial times, with some emphasis upon "popular" and "Art" music of the present century in the U.S.

MU 40 Choral Arts 1-2
Singing choral music past and present, including dramatic music. No more than 3 semester hours applicable toward graduation. Available for audit. (See MU 41).

MU 41 Instrumental Arts 1-2
Small and large ensemble playing of representative works for instruments. No more than 3 semester hours of MU 41 or any combination of MU 41 and MU 40 applicable toward graduation. Available for audit.

MU 42 Class Piano 1-2
Practical keyboard usages in classroom work; accompaniment, simple transposition, harmonization of melodies at the keyboard.

MU 43 Class Voice 1-2
Principles of voice production. Breath control, phrasing, resonance, and diction are stressed.

MU 44 Song 3-3
Popular, folk, and art songs of many nations.

MU 45 Harmony I 3-3
Harmonizations of simple melodies. Principles of modulation and key relationships.

MU 46 Harmony II 3-3
Further work in modulation. Chromaticism. Late 19th and early 20th century developments. Prerequisite: MU 45 or equivalent.

MU 80 Music in Elementary Education 3-4
The objectives and techniques of teaching music in the first six grades. Prerequisite: MU 22.

MU 82 Music in Special Education 3-4
Objectives and techniques of teaching music in special classes. Prerequisite: MU 22.

MU 83 Workshop in Elementary Music Education 2-4
Modern approaches to professional music education in the elementary school. Primarily for elementary music teaching specialists.

MU 90 Independent Study in Music 3 credits

NURSING

NS 10 Introduction to Nursing 2-2
An introduction to the health field and health personnel, with particular emphasis on the evolution, changing role, and preparation of the professional nurse.

NS 20 Foundations of Nursing I 4-5
This course is designed to assist the student to acquire the basic knowledge, attitudes, roles and skills which can be applied to the practice of nursing and daily living and allows for behavioral changes in the student.

NS 21 Foundations of Nursing II 4-7
This course allows the student to continue to use the basic knowledge and skills she or he has learned in NS-20 and apply them to the new learning experiences in NS-21. Planned clinical experiences. (Prerequisite NS 20)

NS 23 Nutrition 3-3
A study of the science of Nutrition and its application to the maintenance of health. Primary concern is given to the food nutrients and their role in body functions. The selection of food and meal planning for optimum health is stressed. The social, cultural, economic, and psychological influences on food habits are explored. Included, also, is a unit on diet therapy. It concerns modification of the diet for patients with common medical and surgical disorders.

NS 24 Foundations of Professional Relationships 2-2
Through group process, the student becomes aware of factors influencing interpersonal relationships.

NS 26 Introduction to Pharmacology 2-2
Using as a model a contemporary American family and working within the students' frame of reference, this survey course examines the more common pharmacological agents used in treating the major health problems of the United States.

NS 30 Medical-Surgical Nursing 12-24
Further development of application of concepts of nursing through identification of health needs of the adult and his family. Prerequisites: Bl 12, 13, 27. Chem. 13, 14 or their equivalent.

NS 31 Maternal and Child Health Nursing 12-24
Physiological and psychological nursing needs of families during child bearing and child rearing years. Prerequisites: Bl 12, 13, 27. Chem. 13, 14. B.S. 23 or their equivalents.

NS 35 Concepts of Nursing I 6-15
Designed to provide the advanced placement student with a quality learning experience to broaden his perspective of professional nursing. Offered 1st semester only.

NS 36 Concepts of Nursing II 3-6
Continuation of NS 35. An in-depth study of nursing theories. (Offered 1st and 2nd semester.) Must be taken concurrently with or following NS 35.

NS 40 Advanced Medical-Surgical Nursing 9-18
Critical analysis of nursing problems. The major causes of illness are the frame of reference. Development of leadership skills is stressed.

NS 41 Community Nursing 6-12
Family nursing care based on nursing and public health theory. Clinical experience in community agencies.

NS 42 Nursing Seminar 2-2
This seminar provides opportunity for senior nursing students to identify and explore some of the critical issues and trends affecting professional nursing today, and to consider opportunities, rights, and responsibilities in relationship to their own professional practice.

NS 43 Psychiatric-Mental Health Nursing 3-5
Principles of preventive psychiatry are applied in the initiation and development of a nursing plan with an emotionally disturbed individual. Practice in the management of group dynamics is also provided. This course is taken concurrently with Community Nursing (NS 41). If NS 44 precedes NS 43, emphasis is placed on implementing the care plan.

NS 44 Psychiatric-Mental Health Nursing 3-5
Principles of preventive psychiatry are applied in implementing the nursing care plan developed in NS 43 for an emotionally disturbed individual. This course is taken concurrently with Advanced Medical-Surgical Nursing (NS 40). In the evènt that NS 44 precedes NS 43, emphasis will be placed on initiating the therapeutic care plan and developing a plan of care.

PHYSICAL EDUCATION

PE 10 Health and Fitness 3-3
Body structure, physical fitness, motor learning, motor performance in terms of their relationship to man's physical well-being.

PE 12 First Aid and Safety 1-2
A behaviorally oriented course structured for those responsible for the safety and protection of others. Satisfactory completion, with official Red Cross certification, is required for all students in all curricula except Nursing, Medical Technology and all Bachelor of Arts programs. Education majors must have completed a First Aid course at the college or elsewhere prior to student teaching.

PE 20-60 Activity Courses 2-1
Activities are taught on a half-semester basis. Each half semester carries 2 clock hours and 1/2 credit.

PE 20	Handball	PE 42	Track and Field
PE 21	Physical Conditioning	PE 43	Gymnastics
PE 22	Weight Training	PE 44	Advanced Gymnastics
PE 23	Wrestling	PE 45	Slimnastics
PE 24	Squash	PE 46	Rhythmics
PE 25	Soccer	PE 47	Field Hockey
PE 26	Lacrosse	PE 48	Advanced Field Hockey
PE 27	Games	PE 49	Aerobics
PE 28	Basketball	PE 50	Square Dancing
PE 29	Advanced Basketball	PE 51	Perceptual Motor Activities
PE 30	Volleyball	PE 52	Techniques of Coaching
PE 31	Softball	PE 53	Dance
PE 32	Swimming	PE 54	Advanced Volleyball
PE 33	Advanced Swimming	PE 55	Recreational Sports I
PE 34	Tennis	PE 56	Recreational Sports II
PE 35	Advanced Tennis	PE 57	Badminton and Table Tennis
PE 36	Archery	PE 58	Modern Dance
PE 37	Badminton	PE 59	Canoeing
PE 38	Fencing	PE 60	Sailing
PE 39	Golf	PE 61	Mountain Leadership
PE 40	Judo and Self-Defense	PE 62	Backpacking
PE 41	Bowling	PE 63	Skiing

First Aid 0-2
The official Red Cross Standard course is required for students in all curricula except Nursing, Medical Technology and all Bachelor of Arts programs.

PE 80 Physical Education in the Elementary School 1-2
Theory and practice course designed to guide the classroom teacher in organizing a comprehensive program of physical education activities.

PE 82 Physical Education for Secondary Schools 3-3
Pertinent background material for organizing and conducting an integrated activity program for junior and senior high school boys.

PE 83 Athletic Training 3-3
The principles and practices of the prevention and care of athletic injuries will be offered to the prospective teacher and/or coach.

PE 84 Officiating Basketball and Volleyball 3-3
The philosophy and techniques of officiating basketball and volleyball for women. DGWS rules are used for both sports and an opportunity is presented to take the written and practical national examination to obtain a rating in either or both sports.

PE 85 Fundamentals of Coaching 3-3
For the prospective teacher-coach. An analysis of the principles and practices of coaching in various sports.

PE 88 Recreational Leadership 3-3
The organization and administration of recreational activities in reference to the development of principles and practices in both school and community programs. Leadership experience with school and community programs.

PE 90 Independent Study 3
Prerequisite is permission of departmental members.

PHYSICS

PH 11 Introductory Physics I 3-4
An introduction to an analytical study of Newtonian mechanics and the properties of matter. A working knowledge of algebra is assumed. Elements of trigonometry are considered in the course.

PH 12 Introductory Physics II 3-4
An introduction to an analytical study of wave motion, electricity and modern physics. A working knowledge of algebra and trigonometry is assumed.

PH 13 General Physics I 4-5
Straight line motion, circular motion, Kepler's law of planetary motion, universal gravitation, work, energy, power; conservation of energy and momentum, simple harmonic motion, kinetic theory and principles of thermodynamics; mirrors, lenses, prisms, diffraction, interference, spectroscopes, polarized light.

PH 14 General Physics II 4-5
Electrostatics, magnetism, electric circuits; wave motion; geometric and physical optics. Prerequisite: PH 13.

PH 15 Modern Physics 3-3
Particles in electric and magnetic fields, Bohr atom, quantum theory, special relativity, radio activity. Prerequisite: PH 14.

PH 21 Mathematical Methods in Physics I 3-3
Analytical geometry: rectangular Cartesian coordinates, distance formula, equation of a line, conic sections and their equations in polar and tangential polar coordinates; applications to mechanics, Kepler's laws of planetary motion; trigonometry definitions, identities, solutions of trigonometric equations, solutions of a triangle.

PH 22 Mathematical Methods in Physics II 3-3
Algebraic equations; graphs of polynomials, rational functions; binomial theorem; logarithmic, exponential functions; construction of functions from empirical date; applications to mechanics, heat, etc.; analysis of errors in physics.

PH 23 Mathematical Methods in Physics III 3-3
Integration — definition, indefinite integrals, integration by parts, substitution; integration of trigonometric functions, partial fractions, application; differential equations — first and second orders, applications to mechanics, electricity, etc.

PH 24 Electronic Physics I 4-5
A.C. and D.C. circuits; diodes and power supplies; transistor hybrid parameters; common emitter amplifier, gain, impedance.

PH 25 Electronic Physics II 4-5
Multi-stage amplifiers; common collector and common base amplifiers; amplifier distortion, gain and bandwidth; sine wave oscillators and multi vibrators.

PH 26 Electronic Physics III — Digital Electronics 3-4
Fundamental theory and application of digital circuits; diode and transistor gates, flip flops, analysis and synthesis of logic circuits using integrated circuits. Prerequisite: Electronic Physics II, or a course in basic electronics.

PH 31 Intermediate Mechanics 3-3
Calculus and delta methods are used in an analytical study of Newtonian mechanics with application to nonconservative forces, central forces, and rotational dynamics. Prerequisite: PH 13 or equivalent.

PH 32 Vibrations and Waves 3-4
Linear Oscillator, free and forced oscillations, damping, vibrating string, traveling and standing waves. Fourier analysis, introduction to wave optics, lab work in physical optics. Prerequisite: PH 31.

PH 33 Quantum Mechanics 3-3
Inadequacies of classical physics, uncertainty principle, Schrodinger equation, physical interpretation of wave function, energy levels, harmonic oscillator, hydrogen atom, perturbation theory. Prerequisite: PH 15 and PH 22 or MA 24.

PH 34 Seminar in Physics 1-1
Oral and written presentation of topics on recent developments in the field of physics. Required of all physics majors. Prerequisite: Junior standing in Physics.

PH 35 Electricity and Magnetism 3-3
After a preliminary introduction to vector algebra, electrostatic as well as magnetostatic fields in vacuum and material media are discussed. Maxwell's equations and propagation of electromagnetic waves are considered.

PH 41 Physics for Secondary Teachers 3-4
Concepts and laboratory work in physics specifically oriented to programs currently being offered or being developed in secondary schools.

PH 42 Statistical Mechanics and Thermodynamics 3-3
Laws of thermodynamics; entropy; Carnot cycle; kinetic theory of gases; Bose and Fermi gases; low temperature physics. Prerequisite: PH 31.

PH 43 Atomic and Nuclear Physics 3-3
Electronic configuration of the atoms; Pauli principle; shell model of nucleus; radioactivity; elementar; particles. Prerequisite: PH 33.

PH 44 Solid State Physics 3-4
Short review of quantum mechanics, crystal structure, magnetism, semiconductor theory, specific heat of solids. Prerequisite: PH 25.

PH 45 Advanced Laboratory 3-5
Selected experiments from different areas of physics; required of physics majors on B.A. program. Prerequisite: PH 25.

PH 88 Physics Methods 3-3
Methods of teaching physical sciences at the secondary level. Includes a survey of modern secondary science curriculum. Prerequisite: IM 24.

PH 90 Independent Study 3 credits
Laboratory research under the guidance of the physics staff. Prerequisite: permission of the instructor.

POLITICAL SCIENCE

Courses in political science are intended for any student with a general interest in politics and government. They are also designed to provide a proper background for students interested in pursuing graduate study or a career in law, public administration, or government and political science. It is recommended that these students take six hours of Modern American Government and six hours of electives.

PS 10 Modern American Government: State and Urban Government 3-3
Focus upon current issues in urban and state government and politics and attempts to evaluate proposed solutions.

PS 20 Modern American Government: The Federal Government 3-3
Growth and complexity of the functions performed by the branches of the national government: Congress, President, and Supreme Court. Examination of the crucial role of the President today in national and world affairs. Attention given to current political campaigns. N.B. PS 10 and 20 or the consent of the instructor are required for all other courses in Political Science.

PS 22 Constitutional Law and the Supreme Court 3-3
Treats the Constitution as a living document, tracing its development through historic Supreme Court decisions.

PS 30 International Law and Organization 3-3
A study of the pioneering political institutions which have been fashioned to cope with the issues of world interdependence.

PS 32 Contemporary International Relations 3-3
A study of critical problems confronting the present international system. The "Cold War," armed conflict, internal violence as well as prospects for the resolution of conflict are explored. Simulational gaming exercises and class discussions supplement readings.

PS 35 Political Systems of the Modern World 3-3
A comparative analysis of modern national governments such as the Soviet Union, France, Germany, and Great Britain. Importance of the world's political heritage and the implications for the emerging nations of liberal democracy, communism, and dictatorship.

PS 36 Civil Rights and Civil Liberties in the United States 3-3
Conceptual perspectives of civil rights and civil liberties, freedom of expression and the problem of loyalty and security, equality, the civil rights movement, criminal justice procedures, and the politics of civil rights and liberties.

PS 40 Principles of Administration 3-3
An introduction to administration is presented. Leadership, authority, change and communications are among the topics discussed. The course includes case studies and problem-solving from such fields as allied health, business, law-enforcement and government service.

PS 90 Independent Study in Political Science
Open to students who have the permission of the supervising instructor and the department. Course of study, meetings, and credit by arrangement.

SCIENCE

SC 10, 11 Physical Science I and II 3-4 each
For the non-scientist. Emphasis is upon the building of conceptual models, solving techniques, and the processes of science.

SC 12 Astronomy 3-4
A study of planetary motion, the sun, stars, and galaxies. An observing program. A background of algebra is assumed.

SC 15 Environmental Physical Science 3-4
The study of (1) the environment, (2) the effects of pollution on the environment, ecosystems and natural balance and (3) relevant background material in physical science as needed. Prerequisite: Physical Sci. I, Earth, Sea and Air or equivalent.

SC 81 Science in Elementary Education 3-4
Content, methods and resources suggested by curriculum groups are examined and experiences developed that exemplify current thinking in science education.

SPECIAL EDUCATION

SE 21-22 Nature and Needs of Exceptional Children I and II 3-3 each
Etiology, classification, problems of children who have physical disability, mental retardation, emotional or social difficulties, giftedness. Clinical observations and consultations.

SE 24 Home Arts 2-4
Food, clothing and other home-arts areas for those who will teach and work with the exceptional child.

SE 25 Drug Education
A learning activity package which deals with drug programs in counseling, treatment and rehabilitation. Students study multi-modality programs and their operation in community agencies.

SE 30 Rehabilitation of the Special Child
An analysis of the adaptive problems of the physically and mentally handicapped.

SE 35 Behavior Management in the Classroom
Students identify and develop solutions to classroom behavior problems of children. A variety of factors that effect the development of behavior patterns in children and the role that the teacher, school and home plays in this development are discussed. Emphasis is placed on techniques for changing or managing behavior in the classroom.

SE 40 Issues in Mainstreaming
Course is designed for Early Childhood and Elementary education majors as a post student-teaching elective. The issues will be applied to the public school system as they relate to the special needs child. Topics will include litigation, Chapter 766, mainstreaming, teacher expectations, accountability, the educational plan, reporting procedures, peer tutoring, human resources, and program models.

SE 41 Severely and Profoundly Handicapped 3-3
Emphasis on special content, methodology, and development of community programs.

SE 50 Early Childhood Experiences for Exceptional Children 3-3
While working with young children through a practicum lasting 10 to 12 weeks the student focuses on play as a means of working with these pre-school special children.

SE 51 Identification and Diagnosis of Learning Disabilities 3-3
Theories of learning and procedures for identifying and diagnosing children with learning disabilities.

SE 61 Industrial Skills and Analysis of Job Areas 3-3
A laboratory course providing technical knowledge and instruction of industrial skills appropriate for the exceptional child.

SE 62 Nature and Needs of the Multiple-Handicapped 3-3
Emphasis on the commonalities, services and needs of the multiple-handicapped.

SE 63 Problems in Language Arts for Special Education 3-3
Students identify, develop, use resources related to classroom problems in language areas. Stages of development and deviations of exceptional child.

SE 64 Seminar in Special Education 3-3
Educational research and study of problems in Special Education. Students appraise and apply resources in development of their research problem.

SE 65 Secondary Education Programs for the Exceptional Youth 3-3
Lectures, discussions, observations and readings for an understanding of how the secondary school can serve the exceptional youth.

SE 66 Language Development 3-3
The process and analysis of language acquisition of infants and the preschool child, the neurological and social bases of oral language and the theory of psycholinguistics.

SE 67 Program Development for Children with Learning Disabilities 3-3
Interpretation, identification and organization of sequential programs for children with learning disabilities.

SE 68 Group Process and Counseling of Children with Moderate Special Needs.
Goals of individual adjustment of exceptional children, evaluation of techniques for gathering and utilizing information, and principles and techniques of using such material in counseling children.

SE 69 Community Resources for the Exceptional Child 3-3
Identification of agencies, practices, and personnel, development of models, simulation of roles, and production of a guide.

SE 70 Integrated Professional Program
The integrated program in the Department of Special Education is an effort to move the preparation of special education teachers from a college-based program to educational settings in the community. In this setting students will have constant interaction among academic, observational, and participatory experiences. When a concept or technique is introduced academically, the student will have the opportunity to observe a demonstration and to engage in practice where he/she can receive guidance, immediate feedback, and further demonstrations. In addition, he will have the opportunity to raise questions based on his academic and participatory experiences and will have the opportunity to share ideas, problems, and learnings with other professionals. This program is an attempt to prepare teachers to best meet the educational/social needs of non-integrated and integrated children who manifest learning/behavior problems.
The program can be viewed in terms of courses and credits. The learnings will go on in activities planned and will not necessarily mean that formal lecture courses are being given.

SE 86 Student Teaching 12 credits
One of the significant aspects of the curriculum is student teaching. All students are assigned to two student teaching stations, each nine weeks in length, and at either the elementary or the secondary level as appropriate. One station is in a "Special needs" room. The other is a regular classroom that is not a special needs room. The cooperating teachers selected for this program have been carefully screened in respect to certification requirements, their ability as teachers, and their identification with the program. Each student assumes complete classroom responsibility in each station guided by the cooperating teacher and the college supervisor. Students receive certification as elementary teachers with approval as special education teachers.

SE 90 Independent Study **3 credits**
Review, development and synthesizing of a problem in Special Education. Open to juniors and seniors with permission of instructor.

SPEECH

SH 01 Speech Improvement **0-1**
Remedial course. Students are assigned after diagnosis, and recommendations of need for speech improvement. Individual and group therapy.

SH 11 Argumentation and Debate **3-3**
The argumentative process in a democracy. Debate, reasoning, research.

SH 12 Intercollegiate Debate **1 credit per semester**
Two such credits may satisfy speech requirement; may repeat for credit; may be pursued as non-credit extracurricular activity.

SH 13 Persuasion **3-3**
Theory and Practice. Analysis of historical and contemporary speeches. Prerequisite: SH 10.

SH 14 Basic Speech **3-3**
Effective organization and delivery of speeches, oral interpretation of literature, techniques of intelligent criticism. Forums, panel discussions, parliamentary procedure. General Education requirement.

SH 15 Introduction to Communication **3-3**
Studies man's capacity to relate to other humans and to his environment through conscious and "out-of-awareness" communication.

SH 16 Speech Theory and Analysis **3-3**
A review of the major concepts of communication that have developed since the time of Aristotle. These concepts will be applied to a variety of well-known speeches.

SH 17 Broadcast Media: Theory and Practice **3-3**
Students will produce media programs through the facilities of local stations.

SH 20 Acting **3-3**
Fundamentals of creative mime, improvisation, stage speech and movement. Reading and analysis of plays.

SH 25 Theater Production and Stagecraft **3-3**
Laboratory situation. Project oriented. The student will take one selected play from initial sketches through to finished model and plans for production. Design, set building, costuming, lighting, and management are the chief elements. No prerequisite but permission of the instructor required.

SH 90 Independent Study **3-3**

INDEX

Academic Probation.....31
Administration.....5
Admissions Information.....22
Advanced Standing.....25
Attendance Regulations.....30

Calendar.....Inside Front Cover
Campus Map ..... Inside Back Cover
Career Education.....20
Career Planning & Placement Center 29
College Level Examination Program (CLEP).....23
College Overview.....18
Computer Center.....21
Course Descriptions & Numbers
- Art.....55
- Behavioral Sciences
  - Psychology.....56
  - Human Services.....58
  - Interdepartmental.....58
  - Sociology.....59
- Biology.....60
- Chemistry.....63
- Computer Science.....64
- Economics.....65
- Education (Early Childhood, Elementary, and Secondary).....66
- English.....67
- Environmental Science.....70
- Geography.....71
- History.....72
- Humanities (including Foreign Languages)
  - French.....75
  - German.....76
  - Russian.....76
  - Spanish.....77
  - Philosophy.....77
- Industrial Arts.....79
- Instructional Media.....82
- Mathematics.....82
- Medical Technology.....84
- Music.....84
- Nursing.....85
- Physical Education.....86
- Physics.....88
- Political Science.....89
- Science.....90
- Special Education.....90
- Speech.....93

Curriculum Outlines
- Biology, B.A. & B.S. in Ed.....37
- Biology, B.S. & Biology/Environmental Science, B.S.....38
- Chemistry, B.A. & B.S. in Ed.....39
- Chemistry, B.S.....40
- Computer Science, B.S.....40
- Early Childhood, B.S. in Ed.....41
- Elementary Education, B.S. in Ed...41
- English, B.A. & B.S. in Ed.....42
- Geography, B.A., B.S., & B.S. in Ed... 43
- History, B.A. & B.S. in Ed.....44
- History, B.A. (European Studies) ...45
- Human Services, B.S.....45
- Industrial Arts, B.S. in Ed.....46
- Mathematics, B.S.....46
- Mathematics, B.A. & B.S. in Ed.....47
- Medical Technology, B.S.....48
- Nursing, B.S.....48
- Physics, B.A.....50
- Physics, B.S. & B.S. in Ed.....51
- Psychology, B.A. & B.S.....52
- Special Education, B.S. in Ed.....53
- Sociology, B.A. & B.S.....54

Dean's List.....31

Elementary Education Specializations ... 34
Evening Session for Undergraduates.35

Faculty.....7
Financial Aid.....28

Goals and Objectives.....19
Governance.....20
General Education.....32
Grades, Incomplete.....31
Grading Information.....31
Graduate Education.....36
Graduation Requirements.....30

Health Center.....29
Health Staff.....17

Instructional Media.....21

Learning Resources Center.....21
Library.....20

Parking Regulations 32
Personnel Supervisors, General 17

Residence Halls 26

Student Indebtedness 28
Student Teaching (Screening Policies).. 30

Summer Session 35

Tuition and Fees 26

Veterans, Benefits 28

Withdrawal from a Course 32
Withdrawal from College 32

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